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ABSTRACT

The Committee on Social and Behavioral Urban Research was asked to advise the Housing and Urban Development Department (HUD) on elements of its long-range research and development program (R & D). Federal, state, and local governments have had access to only small amounts of relevant social and behavioral science knowledge or small numbers of skilled scientists in these areas; thus the nation responds too slowly to urban problems. Scientific and technical knowledge must be used to inhibit misconceived programs as well as create new options. HUD's present research program is limited by insufficient funds and inadequate intramural R & D capacity. Additional extra-mural research capacities can be found in the universities and the non-academic private sector. The "systems" approach shows promise for coping with urban problems and for designing R & D programs. Research is relevant if the results provide: (1) greater understanding of obstacles to successful program implementation; (2) identification of new program instruments for goal achievement; and, (3) the basis for reliable estimates of the future. The Committee therefore specifically recommends research on planning and information systems, sources of obstacles, and new program instruments which foster desired social outcomes. (DM)

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A STRATEGIC APPROACH TO
Urban Research and Development
SOCIAL AND BEHAVIORAL SCIENCE CONSIDERATIONS

Report of the Committee on
Social and Behavioral Urban Research
Division of Behavioral Sciences
National Research Council
to the Department of Housing and
Urban Development

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Preface

The Committee on Social and Behavioral Urban Research is one of two parallel committees in the National Research Council established by the National Academy of Sciences and the National Academy of Engineering to provide advice to the Department of Housing and Urban Development. The parallel committee is the Committee on Urban Technology. (The report of this committee, *Long-Range Planning for Urban Research and Development, Technological Considerations,* is being published concurrently.)

The tasks to which the committees were asked to address themselves are set forth in the "Statement of Work" in the contract entered into between the Department of Housing and Urban Development and the National Academy of Sciences. These, together with the procedures adopted by the two committees, appear in Appendix A. After the reports of the two committees were completed, the Department of Housing and Urban Development requested that their recommendations be set forth in a single coordinating document. This summary report was prepared by the staff of the Division of Behavioral Sciences and is included as Appendix B.

The Committee is grateful to the members of its subcommittees for their services and significant contributions to the Committee's efforts. Their names appear in Appendix C.

The Committee wishes to acknowledge the assistance of the staff of the Division of Behavioral Sciences, National Academy of Sciences–National Research Council. Henry David, the Division's Executive Secretary, and Alexander L. Clark, Staff Associate, who served as Executive Secretary for the Committee, both provided invaluable help, including assistance in the preparation of the Committee's reports.

The Division's Chairman, Herbert A. Simon, and two other members of its

Executive Committee, Robert McCormick Adams and Harold J. Barnett, who reviewed the draft final report for the Division, made helpful, constructive criticisms.

The Committee's report benefited from suggestions by three staff members of the National Academy of Sciences: John S. Coleman, Executive Officer; C. E. Sunderlin, Assistant to the President; and Robert R. Hume, Publications Editor.

The Committee wishes to thank the following members of the Department of Housing and Urban Development for their helpful reactions to the Committee's Interim Report: Robert C. Wood, Under Secretary; William B. Ross, Deputy Under Secretary; Thomas F. Rogers, Director, Office of Urban Technology and Research; R. O. Symmes, Director, Data Systems Development; Dorn C. McGrath, Jr., Director, Division of Metropolitan Area Analysis; Henry B. Schechter, Director, Office of Economic and Market Analysis; and Bernard Russell, Assistant Director, Model Cities Administration. The Committee wishes to single out George W. Wright of the Department of Housing and Urban Development, who served as the Department's technical liaison representative to the Committee, for special mention.

Mrs. Carole Parsons, Staff Assistant in the Division, contributed helpful research and editorial assistance, and the secretarial duties for the Committee were ably performed by Mrs. Sharon Bauer, Miss Theresa Fisher, Mrs. Ruth Jobst, and Mrs. Mary Jones.

This report has the endorsement of each member of the Committee, although they may not all agree to every particular.

Raymond A. Bauer, *Chairman*
Committee on Social and Behavioral Urban Research

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Findings and Recommendations

Decay of the cities, deterioration of the social and physical environments, racial alienation and conflict, and poverty have led government departments and agencies on all levels to seek ways of effectively utilizing the behavioral and social sciences in coping with complex urban problems.

It is unfortunate but true that, confronted with the need to act on problems of urban deterioration, dislocation, and disruption, federal, state, and local governments have been able to draw only to a limited extent upon the relatively small body of relevant social and behavioral science knowledge and the potentially useful intellectual skills of social and behavioral scientists. Had the launching of urban programs been accompanied by the understanding that it is virtually as important to learn about the nation's cities as it is to do something for them, the cities might not be in their present plight. Thus, it took the nation far too long to perceive and to respond to the heavy human costs of inadequate public services, antiquated tax systems, contracting employment, absentee ownership, physical congestion, racial and cultural separatism, and the like. It also took too long to realize that well-intentioned improvements in housing and other physical services do not necessarily have automatic and beneficial effects on human conditions in the city.

This country, as well as other societies, is still being penalized because the human dimensions of urban processes are so poorly understood. In the absence of a purposeful and concerted effort to remedy this situation and to anticipate both the future problems and opportunities that urban America may face, it will continue to be penalized. For such an effort, the social and behavioral sciences are both relevant and useful, if not critical. They make possible the shift from an emphasis on "bricks and mortar" questions in urban research and development to a systematic emphasis on questions that, when answers are forthcoming, will illuminate processes of social change, provide information about human consequences of urban problems, and point to new options for social action.

STRATEGIC CONSIDERATIONS

The urban problems of the nation will not succumb rapidly to new social programs, to technological innovations, or to new administrative arrangements; nor will the resources of knowledge and manpower in the social and behavioral sciences, which are required for the understanding and resolution of these problems, be quickly developed and effectively deployed. Yet, unless their effective development and utilization are made major goals, the nation will be deprived of essential means for overcoming its present urban difficulties and for managing urban affairs better in the future.

It is a difficult matter to withhold even a small fraction of the society's available resources from measures that are vigorously championed as providing immediate solutions to stubborn societal problems. Yet, if scientific and technological knowledge and inquiry are to serve the society well, they must be used for their capacity to inhibit action on attractive but misconceived courses, as well as for their capacity to create new options for action.

To develop the major social and behavioral science research efforts needed by the nation's cities and by the Department of Housing and Urban Development (HUD) will take at least five years under favorable conditions. HUD's present research and development program is limited in scale and intensity of effort by insufficient funds and an inadequate intramural R&D capability. These limit the Department's ability to initiate the research policies and programs that would generate an accelerating rate of growth in manpower resources and extramural institutional R&D capabilities. In consequence, HUD has, in effect, been compelled to allocate a significant–and probably unduly large–proportion of its limited R&D funds to short-term, highly visible efforts. R&D priorities determined primarily by a sense of urgency to show results are likely to be at odds with the need to develop programs and resources that will contribute to improving the quality of urban life over the years to come.

With respect to the basic approach to be adopted in formulating research and development policies and programs, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- establish R&D program priorities in a manner consistent with the principle that the growth of extramural R&D expenditures be kept in phase with the mobilization of existing and potential R&D capabilities, the development of manpower, and the creation of new capabilities;

- begin immediately on the tasks of strengthening present R&D capabilities and creating new ones in the social and behavioral sciences; and
- allocate its R&D budget so that (1) a substantial share is earmarked for the orderly development of a network of extramural research and development capabilities, including the required supplies of scientific and professional manpower; (2) a significant portion is devoted to program evaluation activities; and (3) adequate provision is made to support short-run research centering on the implications of the results of efforts to measure the effects of the urban programs for policy intentions.

RECOMMENDATIONS ON RESEARCH AND DEVELOPMENT CAPABILITIES

The present HUD policy of having most of its R&D conducted extramurally through contracts and grants is sound. The network of related extramural research and development capabilities needed by HUD can be constructed, in part, by mobilizing existing research capabilities so as to bring them more effectively to bear on issues of social policy.

Foremost among existing potential resources, but still relatively unused, are the universities. The major share of the nation's social and behavioral scientists are situated in academic institutions, many of which are increasingly concerned with urban research. The universities, moreover, are a major source of manpower for urban research and development activities and for governmental service.

Three potential resources for the required network of extramural R&D capabilities exist in the nonacademic private sector. They are industrial organizations, profit and nonprofit private research organizations, and consulting firms.

In addition to utilizing available research capabilities, HUD must also create new institutional capabilities to achieve those mission-oriented research objectives for which existing resources are likely to be unresponsive or unsuitable.

Coherent, applied research on urban problems is feasible if the instrumentalities established as HUD's distinctive research arms are institutions whose research activities are multidisciplinary, sharply focused, and purposeful in character. The newly-created Urban Institute serves this function and will be a central element in the network of R&D capabilities.

The Municipal Development Center experimental project of HUD is a worthwhile attempt to create new capabilities for translating and transferring the products of research into more effective policies, programs, and operations in local governments. Effective local research capabilities will also contribute to building up the kinds of data that would help meet HUD's information needs.

The leadership and coordinating responsibilities and functions of HUD for urban research and development give critical importance to its inhouse R&D capabilities. The Department must mount, manage, and monitor rapidly expanding programs, maintain balance among them, and be acutely sensitive to changing priorities. It must play a decisive role in the translation of research results into more effective policies and programs. The present inhouse staff at HUD is neither large enough nor is it sufficiently diversified. The growth of a highly qualified, multidisciplinary staff to a level of between 75 and 100 professionals will be required over the next five years, if the R&D policies and programs recommended to HUD are to be successfully realized. Moreover, HUD will be in a better position to set priorities and to allocate R&D resources, if it can secure informed and critical advice from independent sources on both an *ad hoc* and a continuing basis.

With respect to mobilizing existing university R&D capabilities, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development support

- basic research in the behavioral and social sciences, as well as in the natural sciences, to contribute to the growth of knowledge and its application to the problems of the city;
- a small number of university urban institutes or centers, on a continuing basis, selected on the basis of staff competence and diversity of interest and location, and expand the number of such institutes or centers as funds become available;
- unsolicited as well as solicited proposals that meet the criteria of merit and quality by grant and contract; and
- university educational training programs related to urban needs by providing funds for curriculum revision, facilities, and predoctoral and postdoctoral fellowships.

With respect to the utilization of existing nonacademic private R&D capabilities, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- systematically survey existing private profit and nonprofit research and development organizations and consulting firms to assess their resources for undertaking urban-related R&D and to set standards of expected performance, and

- conduct a systematic analysis of the kinds of industries that are suited to enter into R&D arrangements with federal, state, and local governments.

With respect to creating coherent applied research and development capabilities, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- undertake the planning activities required to bring six additional urban institutes into being, including exploration of the opportunities to create such institutes by modifying or expanding research centers now associated with other federal agencies, private organizations, or universities.

With respect to creating research and development capabilities in state and local governments, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- experiment with the form, location, and funding of Municipal Development Centers (MDC's) to discover the most effective means for strengthening research capabilities in municipal governments;
- increase the number of MDC's each successive year over the next three years to about 25, so as to provide an experimental base for determining whether the MDC's should be made operational on a national scale;
- evaluate the success of the MDC experiment as an attempt to (a) provide for mutually profitable relations between researchers and local decision-makers, (b) attract professional manpower into local government, (c) produce new and needed skills, (d) contribute to the information requirements for sound policy judgment at all levels of government, and (e) provide opportunities for securing systematic knowledge of the administrative requirements of and processes involved in programs for improving the quality of urban life;
- exercise sufficient control over the MDC's to assure a reasonable body of comparable data for use by local, state, and national research bodies;
- secure authorization for programs designed to expand the supplies of scientific, professional, and related manpower for service with local governments in connection with urban affairs; and
- examine the means by which urban R&D capabilities can be provided for state governments.

With respect to developing the Department's intramural research and development capabilities, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- increase its intramural multidisciplinary R&D staff to between 75 and 100 professionals over the next five years and draw personnel from outside as well as from within the social and behavioral sciences;
- offer salaries and working conditions that will attract able and experienced personnel from the academic and industrial worlds, making provision for a large proportion of higher grades and a disproportionately large number of "supergrades";
- establish programs to encourage and facilitate the mobility of scientific and professional personnel between the Department staff and the component parts of its network of extramural R&D capabilities; and
- complement its inhouse capabilities with independent advisory bodies on R&D policies and programs.

POLICY ANALYSIS AND PROGRAM EVALUATION

Research and development is a significant resource for the formulation of HUD policies and programs. The relevance of an overall R&D strategy to HUD's basic missions lies in the extent to which the products of R&D efforts enable administrators to make wise choices among existing options and to create new options. There is the prospect of immediate benefits in the area of policy and program analysis from a fuller use of the social and behavioral sciences. Policy-oriented research can be made most effective when the assumptions that are implicit in policies are stated in a manner that permits them to be tested scientifically.

With respect to research and development contributions to policy analysis and program evaluation, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- devote a major and continuing inhouse effort to the translation of statutory statements of goals into operational terms, so that the relationships assumed to lie between goals and the instrumentalities for realizing them are made explicit and amenable to research;
- continue to have the Director of the Office of Urban Technology and Research report directly to the highest levels within the department;
- invest a significant proportion of its R&D budget in evaluation research on all operating programs; and
- conduct evaluation research designed to assess both the intended and the unanticipated effects of programs on a continuing basis, so that the results will contribute fully to the reformulation and modification of policies and programs.

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RESEARCH AND DEVELOPMENT PROGRAMS

A large number of substantive problems deserve immediate research attention. The responsiveness of such research to the policy and program needs of the Department is a key criterion in the determination of research priorities.

A systematic research agenda can be developed that serves three broad purposes by providing research results useful (1) for planning activities and the development of urban information systems and requirements, (2) for discovering the sources of the obstacles to successful implementation of present programs, and (3) for discovering or identifying new programmatic instruments for bringing about desired social outcomes.

A powerful tool in the national effort for urban reform and reconstruction would be the capacity for the systematic collection, storage, processing, and selective dissemination of data relevant to urban needs and to the functioning of urban programs. The Department of Housing and Urban Development is in a position to assume the key role in the development of information requirements, resources, and systems, and thus contribute to the creation of operationally effective urban information systems.

Much more must be learned about the actual obstacles to program implementation than is now known before programs are drastically altered or new programs substituted. Research designed to explore the feasibility of new and additional intervention strategies can be carried on simultaneously with research designed to understand program obstacles.

The "systems approach" concept, in its meaning of computer-aided simulation as practiced in the aerospace industry, holds little promise of early fruitful results in resolving urban problems. The systems concept in a more general sense does have direct bearing on the design of HUD's research and development program. The urban problems that are pertinent to HUD programs extend beyond the Department's jurisdiction. It is necessary, therefore, to find ways to bring related interests into a coherent enterprise. Otherwise, the missions of HUD, as well as the objectives of other government programs, will not be fully served.

With respect to research and development related to developing urban information systems, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- organize its data, information, and measurement activities under an Office of Information Management;
- strengthen its inhouse capability for assessing "the state of the art" on urban information systems;
- associate itself with several major attempts to develop, test, and evaluate

specific information systems, but refrain from investing sizable resources in the development of large-scale urban information systems until there is a better understanding of how they can best be introduced and constructed; and

- devote a special effort to systematic investigation of the kinds of urban intelligence systems that would complement the growth of urban information systems.

With respect to planning activities and urban information needs, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- provide immediate support for research that will provide two kinds of information requirements: (a) demographic studies, for which the significant variables and the methods for data gathering and analysis are immediately available and the results of which are known to be relevant, and (b) studies of the conditions of variations in neighborhood cohesion, for which the variables and significant measures have yet to be developed but which can be stipulated to have major significance and long-run relevance; and
- undertake immediately the continuing task of defining additional information needs, including efforts to develop more appropriate measures of social change.

With respect to overcoming obstacles to implementing present policies and finding new program instruments, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development support specific research projects[1] in the following areas:

- local governance, as, for example, (a) studies of the ways different types of governments function in different social environments, and (b) the advisability of transferring functions from one to another form of government;
- fiscal policies and the provision of public services at the local level, as, for example, (a) studies of the impact of the property tax on location decisions, land use, and housing maintenance, and (b) the costs and benefits of new types of user charges;
- the effects of legal controls, as, for example, (a) the nature and outcomes of the bargaining process between city developers and regulating agencies, and (b) the potential benefits of new legal definitions of ownership; and

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[1] A detailed statement of specific research problems, upon which this recommendation draws for illustrative purposes, is given in Chapter 3.

- the social and institutional setting of housing programs, as, for example, (a) alternative measures of housing quality, and (b) the functional criteria for density controls.

With respect to the promise of "the systems approach" for coping with urban problems or for designing R&D programs, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- support multidisciplinary research to identify the systems parameters and interacting properties of urban units, investing only modestly in the immediate future in computer-aided simulations of the urban environment.

2

Research and Development Strategy and Management

Modern governments make use of whatever expertise is available in developing public policies. The outcomes of democratic political processes, however, represent accommodations between conflicting views that are unevenly and generally only partially shaped by expert advice that is, more frequently than not, likely to be drawn upon in a relatively untidy and unsystematic fashion. It is not surprising, therefore, that governments are commonly regarded as behaving "unscientifically" and even nonrationally. This view persists even though it has become increasingly clear in recent decades that responsible and efficient governance depends to a growing degree upon the availability of scientific knowledge to public officials and its use by them. This was one lesson learned from War II, which has since been reinforced.

The natural sciences have played a preeminent role in important areas of national policy since World War II. Most of the applications of these sciences have been directed to improvements of specific technologies in the areas of military hardware, atomic energy, space, communications, and public health. In the course of utilizing their knowledge in the achievement of major national goals, the federal government has developed workable–sometimes even intimate–relationships with natural scientists and has come to take for granted the usefulness of their expertise. It may be said, therefore, that both governmental processes and policies have become, at least in part, "scientized," so to speak.

The nation may now be at a critical turning point in making the full range of contemporary scientific knowledge useful to government. And it is this prospect that constitutes an underlying theme of this report.

Government's use of science has not been confined entirely to the natural sciences. But, with the emergence of such grave and frustrating concerns as the decay of the cities, the deterioration of the human environment, racial alienation and conflict, and poverty, for example, government on all levels is increasingly compelled to search for the ways by which the behavioral and social sciences can be effectively utilized in the resolution of complex and seemingly intractable human problems.

It is reasonable to ask, therefore, whether systematic use of the social and behavioral sciences can serve to inject into the formulation of government policies dealing with pressing social problems–in particular those of the city–the same use of scientific knowledge and judgment and rational choice associated with the natural sciences.

This report maintains, both implicitly and explicitly, that the social and behavioral sciences, properly utilized through appropriate institutions, can provide a sounder basis than now exists for dealing rationally, through government on all three levels, with social problems that preoccupy and oppress the nation. The concern of this report is with the city, but there is a more general application in its contention that rational analysis and inquiry in the scientific mode do, indeed, represent enormous resources that have only begun to be tapped for the conduct of government.

It would be incorrect to read into this view more than it states–namely, that the methods of rational analysis and the structure of knowledge developed in the behavioral and social sciences can contribute powerfully in the formulation of policies aimed at the attainment of national aspirations. Modern society, largely the child of science and technology, may not survive whether or not scientific and technological knowledge is wisely and inventively applied. Yet, in the final analysis, the members of the Committee see no realistic alternative to trying to inject the rationality of scientific knowledge and methods into the governance of the society. Scientific knowledge and the habits of tough-minded, systematic analysis are not substitutes for wisdom, but they can serve as powerful handmaidens to sound policy thinking and judgment.

RESEARCH, POLICIES, AND PROGRAMS

The Committee believes that HUD's R&D efforts, in mirroring the Department's mission, should aim at mounting and sustaining research and development programs that will have an intellectual coherence matched by and coupled with a corresponding coherence of the Department's policies and programs and organizational structure. HUD's investment in R&D, it appears to the Committee, must be shaped by, at least in part, three needs:

- to find answers to immediately pressing problems;
- to initiate research that will identify problems before they become unmanageable; and
- to identify the range of available policy instruments and the combina-

tions of programs, institutional arrangements, and mechanisms that will yield rapid movement toward goal achievement.

The perception and the statement of problems, as well as the selection of instruments for dealing with them, invite research. Critical to HUD's investment in R&D are the goals that the Department's policies and programs are intended to achieve, and its inhouse capability for conceiving, managing, monitoring, and utilizing R&D programs.

The central issue for policy-related research is that of relevance. Relevance must be assessed in terms of goals. Major and continuing problems encountered in mounting concerted programs of policy-oriented research are the translation of generally accepted statutory statements of goals into operational terms and making explicit the criteria necessary for articulating programs and policies, including the clear identification of the relationships assumed to lie between goals and the instrumentalities for realizing them.

Thus, when a particular program is said to have been unsuccessful, it should be known (as is now generally not the case) whether (1) it was launched on an insufficient scale; (2) the instruments used were inappropriate; (3) ways of measuring effects were not available; (4) the measures of achievement were changed in midstream; (5) the assumptions made about relationships between the instruments and goals were invalid; or (6) the goals were impractical. A first step toward altering this common situation is HUD's inhouse capability for goal specification.

GOAL SPECIFICATION

Public policy statements of goals tend to be cast in ambiguous terms. Otherwise, they would not be likely to win the political consensus that invites action. Consequently, it is essential to translate statements of goals that have rhetorical and political potency into statements of problems that are soluble in the light of scientific knowledge and procedures, so that the ordered experiments and scientific modes of inquiry required for policy-related research can be developed and articulated.

Research can assist in this effort. It can help provide the means by which highly ambiguous goals can be translated and given new substance and meaning by identifying and restating their component elements and their interrelationships. Most of this task must be accomplished inhouse by HUD. In ordering research priorities, the Department must also determine whether its planning, programming, and budgeting system categories hinder or prevent exploring the interdependence of problems and the ramifications of programs in many "functional areas."

Clear statement of goal structures and the means for altering them and developing higher orders of specificity must be related, the Committee believes, to more than HUD's R&D capabilities. The extent to which HUD's R&D programs are articulated with the policies and programs of the Department as a whole is important, for the R&D activities should not be thought of merely as constituting a service function within the Department. They should be viewed as a resource to be used in the formulation of departmental policies and programs. Accordingly, it is essential that the Director of the Office of Urban Technology and Research continue to report directly to the highest levels within the Department.

Policy-oriented research can be made most effective when the assumptions that are implicit in policies are stated in a manner that permits them to be tested scientifically. This is critical in bringing social and behavioral research to bear on the formualtion and assessment of action programs. Ideally, HUD should be in a position (1) to identify and measure the impact of urban programs and policies, (2) to develop indicators that will permit the Department to learn how well its instruments serve to achieve its goals, and (3) to monitor programs in operation through an intelligence system sensitive to ongoing changes and to "alerting" signals that warn of emerging problems. These three sets of activities, which depend on goal specification in part, are essential ingredients of the policy-related research process.

Underlying this process is the need to identify, assess, and articulate the particular assumptions made when it is asserted that particular programs will serve to realize the specific objectives of broad policy goals. Assumptions of this kind normally remain hidden but must be made highly visible. Research is needed on the causal links alleged or implied to exist between specific programs and policy objectives. Some assumptions currently made may be consistent with existing bodies of well-tested social theory. However, it is more likely that the assumptions underlying proposed solutions to problems are untested hypotheses. These demand clarification, investigation, and analysis.

It is obvious that the policy-related research process requires at least two major inputs whose quality will, of course, be determined by HUD's inhouse R&D capability. They are (1) the careful specification and study of goals, and their translation into a hierarchy of objectives and achievable criteria, and (2) analysis and clarification of the array of instruments that are intended to realize the stated objectives, and the search for new instruments.

INSTRUMENTS AND GOALS

Identification and specification of the causal links between instruments and goals, either by further theoretical work or by controlled experiment, will, in turn, enable researchers, depending on their competence and originality, to generate as outputs (1) measures of the impacts of instruments on the urban environment, (2) measures of the performance of instruments in terms of goal achievement, and (3) translation of the measures into sensitive social indicators for monitoring urban programs.

Mission-oriented research will be assisted materially by a comprehensive listing of categories of program instruments that are intended to realize urban policy. Such an inventory is needed before disparate categories can be compared, contrasted, and/or packaged in an attempt to understand complementary and conflicting consequences, as well as the nature of possible trade-offs among program instruments. Similarly, based on a comprehensive statement of goals for urban policy, efforts should be directed to examining goals for possible contradictions and to translating goals into objectives to which program and performance measures can be assigned, and for which detailed performance criteria can be specified.

An example of the potential contributions of such an analysis of goals to program planning and related R&D efforts appears in the following:

> ... the goals of public housing have never been agreed upon, even by those who strongly support the program—even perhaps within the minds of many housing officials or project managers. Is it the duty of public housing to provide a subsidized, sheltered home for the respectable, unfortunate poor? This is probably the predominant goal of housing for the elderly. Is it the duty of public housing to provide minimum facilities for the poor—to protect them from fire and rat bites, and, incidentally, to protect the city from the spread of fire and infection? Or is it the duty of public housing to rehabilitate the dependent poor, by providing them with a total new environment and a massive infusion of social services?
>
> These three goals are to a degree incompatible. They certainly cannot coexist in one project; they imply different rules, strategies, and modes of management.[2]

Statements of policy intentions such as "to rebuild or revitalize large slum and blighted areas," and "to reduce dependence on welfare payments," for example, lack the operational specificity required for systematic and objective study of the programs adopted to implement them. Even with a detailed array of instruments and objectives, the following questions remain to be answered:

1. Are the instruments expected to make an important change?
2. When applied, do they lead to changes in the desired direction?
3. If they do, to what extent do they achieve the goals?
4. What are their other system-wide impacts, and are any of these likely

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[2] Lawrence M. Friedman, "Public Housing and the Poor: An Overview." *California Law Review* Vol. 54, No. 2, May 1966, pp. 665–666.

to create problems in the future, apart from the detailed measures of program performance implied in question 3?

Questions such as these may strain the theoretical and research capabilities of social and behavioral scientists, but that is one of their values, for they show promise of generating new rounds of theoretical and empirical development.

THE QUESTION OF PRIORITIES

In considering the question of priorities for R&D expenditures, the Committee recognizes the sense of urgency to which HUD must be properly responsive. The Department understandably will devote a significant portion of its resources to providing visible evidence of its interest in R&D results that will lead to action as rapidly as possible, but it should not lose sight of the fact that the development of a viable and productive social and behavioral science research capability cannot be achieved over the short run. An excessive preoccupation with short-run payoffs could divert attention from the necessary long-term investments in research required to monitor and to modify programmatic efforts.

The guiding principle for setting R&D priorities should be that available and potential resources be mobilized through a coordinated development of HUD's R&D program aimed at keeping capabilities, manpower, and funding carefully in phase. In line with this, the Committee recommends that (1) a substantial share of HUD's R&D budget be devoted to the orderly development of a network of extramural research and development capabilities, including the required supplies of scientific and professional manpower; (2) a significant portion of the R&D budget be allocated to program-evaluation activities; and (3) specific substantive research be funded, over the short run, as research needs emerge from a scrutiny of policy intentions and from the information emerging from research that measures the effects of the Department's programs.

Social and behavioral science research can serve not only to ascertain whether the goals implicit in policy statements are attained but, more important, to discover also the unintended behavioral consequences of goal-directed programs. The findings of such research can then be used to reassess goals and to provide a rational basis for their reformulation. In its future R&D efforts, HUD cannot afford to be inattentive to the perspective of hindsight that suggests–implicitly or explicitly, and sometimes erroneously–that the undesirable consequences of purposive attempts to manage social change could have been anticipated at the very beginning. Examples of the failure to anticipate are numerous. It has been charged that one could have predicted that FHA home mortgage policies would drain off the middle-class segment of urban populations; that urban renewal programs would dislocate rather than relocate lower-income families; and that rent supplements would make the slums more lucrative for landlords. More recently, it has been pointed out that

> The men who devised the Model Cities program were alert to the programs of bureaucratic mismanagement. They therefore wrote into the law a provision for "popular participation" in this bold new venture into city planning. To get its allotted funds, each of these sixty-three cities has to demonstrate to Washington's satisfaction that citizens' governing boards in the affected neighborhoods "participated actively in planning and carrying out" the program. These boards are now being formed via popular election. In Atlanta, a white neighborhood has elected a couple of Ku Klux Klansmen. In Detroit, in a half-Negro, half-white neighborhood, the board is all Negro. Officials in Washington are reported to be very upset at the way things are going.[3]

These observations should not suggest that unanticipated consequences may not attend the most carefully planned programs, or that long-term research should not be initiated or that changes should not be made in the character or scope of programs until all doubts are resolved. The exercise of prudence in the face of uncertainty should not be confused with a sense of caution so extreme as to paralyze decision-making on research investments or program alterations.

The Committee recommends that HUD assign high priority to program evaluation research. The need to translate policy and program statements into research questions has already been emphasized. When the underlying assumptions governing the belief that particular program instruments will serve to attain specific objectives are made explicit, fairly long-term longitudinal investigations can be designed for assessing both the intended and unintended effects of the program instruments. The Committee visualizes shorter-term research efforts as providing results in the form of sufficiently detailed information to establish bench marks that can be used in subsequent research to measure change. At the same time, this information would be fed back into departmental policy and program decision-making processes. Thus, periodic measures of change taken over a long period of time would not only show the actual impact of programs, but would also provide information suggesting changes in the substance of programs. A significant change in program would require an explicit statement of any new underlying assumptions or hypotheses upon which it rests, and this, in turn, would serve to redirect subsequent short-term research activity. This process, systematically pursued, would enable HUD to ascertain whether programs are both rationally and effectively

[3] Irving Kristol, "Decentralization for What?" *The Public Interest* No. 11, Spring 1968, p. 18. (Copyright © 1968 by National Affairs, Inc.)

related to the conditions they are intended to change. Independent objective evaluation of every major program adopted by HUD to realize its missions would be a feasible undertaking, if existing university social science research capabilities were skillfully exploited, if an investment were made to develop extramural research capabilities in other institutional settings, and if inhouse R&D capabilities were present.

Operating programs, the Committee believes, must be accompanied by sufficient research to ensure that future programs will profit fully from the earlier experience. Overly cautious or penurious investment in long-term evaluation research would result in short-run savings bought at the price of lost opportunities for learning from investments of resources in major programmatic efforts.

A key element in the strategy for implementing an effective R&D effort in program evaluation is institutionalizing the capability for long-term R&D through the policies governing the support of R&D activities. Consequently, it should be recognized that funding R&D efforts on an annual basis is not wholly consistent with the need to formulate, monitor, and modify policies and programs that are intended to produce fundamental and lasting changes in the lives and institutions of the majority of the nation's people.

The urgent need for program evaluation, particularly in connection with the Model Cities program, has already been recognized by HUD. It may be tempted to skimp on its inhouse R&D capabilities, on the grounds that qualified extramural contractors and grantees will guarantee the quality of the work. The Committee urges that that possibility be guarded against, for if HUD's intramural manpower resources for generating, evaluating, and applying research are allowed to remain relatively undeveloped, its extramural R&D expenditures risk being wasted.

When short-term research inquiries are conceived so as to give quick and reliable readings in order to provide feedback on program effects, they should, at the same time, be designed to serve as the bases for repetitive studies over longer periods of time. A program as ambitious and significant as the Model Cities experiment certainly establishes a requirement for continuous long-term assessment. Repetitive cross-sectional and time-series studies of the relative successes of the many Model Cities projects should benefit from standardizing the measures of impact, so that the results of many independent research investigations can be made comparable.

SYSTEMS APPROACHES

Part of the Committee's assignment is to "consider the applicability of a 'total systems approach'" in making recommendations for mobilizing and augmenting ". . . the capabilities now available for solving . . . [urban] problems . . . ." Its views on this matter are, perhaps, better presented in juxtaposition with its positions on R&D strategy than in other sections of this report.

It has, of course, become fashionable to employ the terms "systems" and "systems analysis" in discussions of complex matters. Since it is not always evident what is meant by the term "system," and the subject of urban information systems is treated in another section of this report, the Committee has an obligation to make clear its own understanding and use of the term with respect to "solving urban problems."

Provided the concept of "a systems approach" is broadly construed, there is little doubt that it should be applied to urban problems. To say this, however, is to recognize that the various parameters of social units and the variables by which the parameters are made operational are interconnected at many points. An attempt to influence any one factor or sector of local units will produce secondary and tertiary consequences, and they, in turn, will affect the outcome of the initial effort. It follows, therefore, that ameliorative programs should be designed with as full an awareness as possible of the system linkages in the unit that is to be modified. An important task for social science research is to search for those linkages and to assess their interactive effects. Research addressed to that set of problems must be multidisciplinary in character.

The "systems approach" concept has a different meaning when associated with computer-aided simulation as practiced in the aerospace industry, for example, and with automated processes of many kinds. There are those who advocate the application of this generalized problem-solving skill to urban problems. In fact, some limited success has been achieved in transferring that skill to very specific subjects, such as transportation, sanitation, and, to a lesser extent, the housing market, by approaching them as "closed system" problems. The adequacy of the models developed for analysis of these particular problem areas is open to question. What is not a matter of dispute, however, is that they are based on oversimplified assumptions about the patterns and processes of collective behavior.

The Committee believes that the systems approach, in this formal, methodological, second sense, holds little promise of early fruitful results in resolving urban problems. The models to which it is applicable are too mechanistic to fit the disorderly and extremely ramified character of collective life. This is not to say, however, that work on the development of urban models should be discouraged. On the contrary, a comprehensive research program should include model construction as an important ingredient. At the very least, explorations in model construction and their applications in simulation exercises should serve to expose areas of ignorance, the remedy of which might lead ultimately to perfecting a usable model of the social system. But the important results from work of this nature should be expected to come over the long run, and not in the proximate future.

Using the systems approach in its first and looser meaning requires a definition of the urban system. One inclusive definition is: "An urban system is the total set of urban units among which there are more or less orderly flows of raw materials, finished products, information, and people." Anything less comprehensive is a subsystem. Whether the subsystem and the parent system are isomorphic is a moot question. In any case, it is the individual urban unit that is commonly thought of when the term "urban system" is employed. Insofar as the designation of the local unit as a system is correct, it is so because the urban unit is constituted of a network of relationships by which inputs to a localized population are received and distributed among the members, and by which goods and services are produced and transmitted as outputs to other similarly organized populations. As such, it is a highly dependent unit, vulnerable to external disturbances and, consequently, unstable over short as well as over longer intervals of time. In other words, the local unit is either an open system or subsystem, as the case may be.

The local unit that most nearly approximates an "urban system" is the metropolitan area, whether operationally defined as the Standard Metropolitan Statistical Area or as a larger unit of territory. Cities and other minor civil divisions that fall within the metropolitan area are specialized parts of the whole and, therefore, are not self-sustaining and self-contained entities. While this is less true of central cities than of their suburban appendages, the continuing spread of industry and of other institutions is steadily reducing the degree of freedom for independent action by central cities.

In keeping with the character of the urban unit, it is possible to identify a number of system sectors as its components. Some of these are relatively clear-cut and constant. Others are unstable and less susceptible to easy observation. These sectors may be classified as (1) utilities, (2) territorial, and (3) institutional. They may, moreover, be thought of as distinguishable patterns of flows with interactions and feedback mechanisms.

In the utilities sector are the transportation networks, including the street pattern and its traffic, the water–sewage system, the power and communications systems, and various other installations for distributing services and for linking activities. Each of these has its own directional pattern, capacity limits, and regulatory principles. Moreover, each is also subject to the rhythms and peculiarities of operations in the other systems sectors.

The territorial sector comprises all those spatial clusters of activities together with the buildings that house them. Thus, there are central and subsidiary business districts with their mixes of activities and the external economies engendered thereby, industrial districts with broadly similar features, and residential districts. The latter may vary greatly in the extent to which interactions are localized or confined within particular boundaries. Some, such as ethnic colonies and upper-class suburbs, may be relatively self-contained over certain periods of time. Others may lack any internal exchanges that give them identity. All territorial units, nevertheless, are necessarily tied to the utility systems, though not in every case in a uniform way.

Finally, overlaying the territorial units are various institutional networks differing from place to place in composition and in number. Every urban unit, of course, has its governmental structure with its many agencies. That structure is disconnected and duplicative in the metropolitan area, with *ad hoc* linkages here and there. Less obvious are other networks. One, for example, is that involving lending agencies, builders, realtors, municipal planning agencies, and the courts, which regulate housing and land development policy. Another consists of private welfare agencies, schools, courts, service clubs, federal and state agencies, and so on, which administer aid to dependent members of the population. Still another is formed of chambers of commerce, associations of manufacturers, city clubs, businesses, and industrial establishments, which influence, if not regulate, labor and wage policies. These networks, of course, are illustrative, not exhaustive. The point is that such networks exist and exercise important influence on how an urban unit operates.

The flows or, perhaps more precisely, the processes within each of these systems sectors are necessarily interconnected at many points, and they cumulate to constitute the total urban process. Nevertheless, there are disjunctions at many points which may be due, in part, to the absence of adequate paths of communication among them and, in part, to diverse and competing interests. Such disjunctions reflect openness in the subsystem.

But the systems concept takes the researcher beyond subsystem limits, however they may be specified. For example, should an expansion of employment in a northern urban area draw workers from a rural poverty area, such as in Mississippi, then the relevant system boundaries must be enlarged to interregional scope. This would also apply should an urban area, in obtaining its water supply from a lake or river, find itself involved in a set of relationships with other urban areas also dependent on the common supply. Many examples of this kind could be offered, for, to reiterate, every urban area is enmeshed in a more inclusive system.

An important implication of these observations is that, in many instances, the concerns that are pertinent to HUD programs extend far beyond the jurisdiction of the Department. Still, HUD cannot afford to ignore them. The task, then, is to find ways of bringing related interests into a coherent enterprise, so that the missions of HUD, as well as the objectives of other governmental programs, will be adequately served. Quite probably this can best be accomplished, at least in the first instance, at the research level. The reason for this assertion is that the interrelation among HUD's and other agency programs will become apparent to the extent that multidisciplinary research achieves its objectives.

The system concepts as outlined here have direct bearing on the design of an R&D effort. In the first place, a research program, as a whole and in its severality, should recognize systems properties of urban units, and should, whenever possible, direct its efforts to investigate the nature of the networks, viewing all problems and programs in the light of findings concerning system and sector processes. Second, the systems concept as it enters into research projects and programs should be extended to metropolitan dimensions and beyond, as indicated by the research problem at issue. Finally, R&D activities should in substantial degree address their information function efforts to the definition and collection of data on system parameters.

In attending to these immediate ends, the R&D effort should not lose sight of the long-run objective mentioned earlier, that is, improvement of the state of the art in the social and behavioral sciences to the point where systems models can be constructed as fruitful aids to the understanding and management of urban processes.

The Committee concludes that HUD's R&D policies and programs should be so designed and developed as to provide the basis for program administrators to do more than simply run the system. This objective is a critical function of the investment in R&D, for the results of research should help direct administrators to give conscious attention to the advisability of redefining and/or redesigning the system they are administering.

Accordingly, the Committee subscribes to the idea that a key criterion for evaluating the Department's research and development efforts is the degree to which they enable administrators to make wise choices among options and to create new ones. The terms for judging the relevance of an overall R&D strategy to HUD's basic missions lie in the extent to which the products of research and development efforts provide the Department with opportunities to rethink problem statements, goal structures, and the instruments utilized to realize specific program objectives.

3

Specific Recommendations for Research and Development Programs

Simultaneously with developing the Committee's recommended strategy for identifying the relevance and priorities of specific substantive research, HUD should give a large number of problems immediate research attention, and establish priorities for these on other grounds.

In choosing among the different ways in which its research recommendations could be ordered, the Committee started with the view that what one thinks he needs to know depends in good part on how problems are defined. In this regard, James Q. Wilson observed recently that

> In a poll of over one thousand Boston homeowners that I recently conducted in conjunction with a colleague, we asked what the respondent thought was the biggest problem facing the city. The "conventional" urban problems—housing, transportation, pollution, urban renewal, and the like—were a major concern of only 18% of those questioned, and these were expressed disproportionately by the wealthier, better-educated respondents. Only 9% mentioned jobs and employment, even though many of those interviewed had incomes at or even below what is often regarded as the poverty level. *The issue which concerned more respondents than any other was variously stated—crime, violence, rebellious youth, racial tension, public immorality, delinquency. However stated, the common theme seemed to be a concern for improper behavior in public places.*[4]

Wilson's observations serve to illustrate a fundamental guideline in the Committee's choice among several alternative taxonomies for ordering its specific research recommendations—namely, that what is considered most relevant depends on the definition of the problem. Thus, the public policymakers' definition of urban problems may lead them to believe that people need housing, while many of the intended recipients of this alleged benefit may define their problems in human-conduct terms, with the result that what they demand (or would demand, if they had the opportunity) differs in kind from what public officials think they need. It may very well be, of course, that, in the case of housing, need and demand are not entirely independent. Indeed, the policy choice to increase the availability of housing for lower income people apparently rests on the assumption that the provision of more and better housing will result in enhancing the quality of the social environment. On the other hand, need and demand in this instance might be related in a quite different way, with the condition of social disorganization representing an important element in the type of housing that people demand. Wilson makes this point, as follows:

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[4] James Q. Wilson, "The Urban Unease." *The Public Interest* No. 12, Summer 1968, p. 26. (Copyright ©1968 by National Affairs, Inc.)

> *Increasingly, the central city is coming to be made up of persons who face special disabilities in creating and maintaining a sense of community . . . .* They move into high rise buildings in which their apartment is connected by an elevator to either a basement garage (where they can step directly into their car) or to a lobby guarded by a doorman and perhaps even a private police force. Thick walls and high fences protect such open spaces as exist from the intrusion of outsiders. The apartments may even be air conditioned, so that the windows need never be opened to admit street noises. Interestingly, a common complaint of such apartment dwellers is that, in the newer buildings at least, the walls are too thin to insure privacy–in short, the one failure of the physical substitute for community occasions the major community oriented complaint.[5]

On the basis of this observation, it is useful to think about what "better housing" means to the people who live in areas where the absence of community is taken for granted.

An additional consideration in ordering its substantive research recommendations was the Committee's knowledge that HUD had already received advice (or would soon receive it) on its R&D program from a variety of sources in addition to the National Academy of Sciences. In particular, the Committee reviewed the substantive research recommendations by RAND,[6] in which four of seven arbitrarily defined urban problems were chosen and then ordered in programmatic terms in making specific research recommendations. The Committee has no quarrel with this approach for setting forth substantive R&D items, but it sees no reason for duplicating it or for repeating specific research advice that HUD already has in hand. Also, in reviewing the research that is being surveyed or commissioned by the National Commission on Urban Problems, the Committee found that HUD could soon expect to learn a great deal more about the present state of knowledge on zoning, housing and building codes, taxation, and development standards, for example. Also, the Committee takes it for granted that HUD is monitoring similar relevant ongoing activities such as the President's Task Force on Communications Policy, which is exploring the implications for urban life of such innovations in communications as facsimile mail, electronic communications, computerized money and credit systems, home consoles for access to education and information reference banks, and TV surveillance for traffic and public order and safety. Consequently, the Committee considered several alternative approaches to ordering its specific recommendations for social and behavioral science research.

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[5] *Ibid.*, pp. 32–33.

[6] The RAND Corporation, *Recommendations for Research in Support of Federal Urban Programs.* Memorandum RM-5503-HUD, April 1968.

Among those considered was the possibility of arraying specific research needs in terms of the several social and behavioral science disciplines. This would have the advantages of making urban-related research more attractive to university-based scholars and facilitating manpower development by strengthening education in urban affairs. However, it is obvious that the separate disciplines neither originated nor are presently organized in terms of social problems, and certainly not in terms that match HUD's jurisdiction and mission. This does not mean, of course, that discipline-oriented research is not relevant to the policy and program needs of the Department. It does mean, however, that its relevance to policy and program needs must be established in terms of the implications of research results for social action. Since discipline research is seldom action-oriented, some translation of results is usually required to establish their relevance to the policies and programs of a mission-oriented agency. Thus, the findings of a recent sociological study demonstrate that children's educational aspirations are highly associated with their parents' educational achievements.[7] This finding is important on a number of counts, not the least of which is that it clarifies the relative validity of several sociological theories of children's educational aspirations. But it is very doubtful that the results of this study can be translated into a prescription for a program designed to produce major beneficial changes in the immediate future.

This observation, in itself, commends a specific research effort. The problem of translating the results of discipline-oriented research into hypotheses and conclusions that will be useful to action-oriented public administrators invites a modest effort in its own right. The Committee recommends, therefore, that HUD, if it has not already done so, utilize its inhouse capabilities

[7] William H. Sewell and Vimal P. Shah, "Parents' Education and Children's Educational Aspiration and Achievements." *American Sociological Review* Vol. 33, No. 2, April 1968, pp. 191–209.

to undertake a systematic search for the conceptual tools, methodologies, analytical results, and attempts to synthesize and generalize the findings of numerous studies in the various social and behavioral science disciplines, and to determine what use can be made of this knowledge in realizing HUD's R&D contributions to the policies and programs of the Department.

At an early stage in the Committee's life, an attempt was made to order substantive research recommendations in terms of HUD's Planning, Programming, and Budgeting System (PPBS) categories. This turned out to be less desirable than the Committee originally had thought. Indeed, it discovered that arranging substantive research requirements under the rubrics of the five PPBS categories (Housing, Land Use and Community Development, Community Facilities and Utilities, Assisting Local Government Administration and Coordination, Managing HUD Resources and Programs) resulted in a fragmented approach in conflict with the main thrust of the Committee's recommendations. The Committee recognizes the logic that produced the PPBS categories for the functions they were intended to serve, but does not believe that they are wholly appropriate for ordering specific research questions so as to show their relevance to policy and program needs.

CRITERIA OF RELEVANCE

The Committee invoked two general conditions of relevance: (1) that research should be responsive to the policy and program needs of the Department, and (2) that research should serve to keep the issue of problem definition open-ended. In the broadest sense, HUD's mission is to administer programs and to assist others–notably local governments–to act so as to effect improvements in the quality of urban life. The Committee concluded that cumulative knowledge and the results of new research must be organized in terms of the requirements of effective action, and that research, at the same time, should provide the basis for identifying and encouraging sound and realistic choices among a variety of new policy and program options.

This approach to ordering substantive research recommendations has the advantage of establishing relevance so as to reinforce the importance of an R&D program to the effective performance of the Department's mission. In the absence of contrary evidence, it may be assumed that HUD's present programs would achieve their policy objectives to the extent that the intentions of the programs were not distorted in their administration. Therefore, *research is relevant if the results provide for a greater understanding of the obstacles to successful program implementation.* In addition to providing knowledge about obstacles to the realization of programmatic goals, *the results of research should help to identify new programmatic instruments for goal* *achievement.* A third criterion of relevance, the Committee believes, is that *research should provide the basis for reliable estimates of the future* that equip public officials with the knowledge and lead time essential for effective program planning.

Accordingly, the Committee has ordered its specific research and development recommendations under three broad categories: (1) research related to planning and information systems; (2) research designed to discover the sources of the obstacles to successful implementation of present programs; and (3) research directed to the discovery or identification of new programmatic instruments for bringing about desired social outcomes.

The specific research recommendations that follow represent a major shift in emphasis from the traditional "bricks and mortar" approach to urban research and development to a systematic concern with people, their condition, institutions, and social change. The principal implication of such a shift in emphasis is that the Committee cannot accept as operative the assumption that improvements in housing and physical services have an automatic and beneficial multiplier effect on the human conditions of the cities. Housing may be overemphasized as a critical variable in the urban situation. The Committee is persuaded, consequently, that urban processes may be more effectively studied and altered when viewed in their human and institutional dimensions.

RESEARCH RELATED TO PLANNING AND INFORMATION SYSTEMS

The Department of Housing and Urban Development has a direct stake in contributing to the growth of reliable knowledge about urban processes. The more information and knowledge there is on these processes, the better able the Department will be to select or design appropriate program instruments for action, to identify strategic points of intervention, to anticipate the consequences of programmatic efforts, and to determine which indicators of change have to be monitored in order to judge whether objectives are being attained and whether corrective action needs to be taken. The crucial role of information as a research objective is a special topic of concern in Chapter 5. Here, in its specific research recommendations, the Committee emphasizes the importance of two kinds of information requirements for immediate research attention. In order to produce the kinds of knowledge likely to contribute most to program planning requirements, the Committee recommends that HUD provide support for (1) demographic studies, for which the significant variables and the methods for data-gathering and analysis are immediately available and for which the results are known to be relevant; and (2) studies of the conditions of variations in neighborhood cohesion, for which the variables and significant measures have yet to be developed, but that can be stipulated to have major significance and long-run relevance.

POPULATION

No data are more crucial to urban planning than those which deal with population, its distribution and composition, its past and future growth. Nevertheless, the cities are largely content with snapshots of their populations taken by the federal government at ten-year intervals and made available in detail some years after the actual count. Furthermore, there is serious underenumeration of Negroes and slum dwellers. In short, the vital statistics essential for understanding the dynamics of change and the assessment of "social health" are inadequate.

It is true that some cities have had special censuses taken, and a few, like New York City, conduct and report reviews of vital statistics. By and large, however, the competence to make profitable use of demographic data for planning and for other purposes is lacking in city governments. And while some effective use of such data can be made by intelligent but untrained persons, there are many pitfalls in the use of demographic data, and much more can be gained by intensive, expert analysis.

A single example will demonstrate the importance of the use of demographic data. In preparing materials for a medical school lecture, some years ago, one of the members of this Committee noted that the infant mortality rate for Negroes in a large Northern city, where nearly all babies were delivered in hospitals by doctors, was only slightly less than in Mississippi, where midwives delivered a considerable proportion. It further appeared that neonatal deaths were excessive in certain areas and, more particularly, in one hospital. These facts went practically unnoticed, and, consequently, no remedial action was taken until they were made the subject of a series of newspaper articles. The obvious point of this experience is that demographic data and their analysis are immediately useful for identifying concrete opportunities for improving the quality of life in the city.

The Committee recommends, therefore, that demographic studies of urban populations be considered an indispensable part of the research efforts sponsored by HUD, and that demographic competence be included in HUD's in-house and extramural research capabilities. In particular, data-gathering and analysis should be directed toward the delineation of patterns and processes of population growth and change, the social and economic characteristics of populations, the redistribution of population between rural and urban areas and within cities, and the demographic aspects of health and education.

1. *Patterns of Growth* Patterns of growth in the cities are changing, and it is quite possible that urban programs may be designed for the population of the last decade rather than for the next. Shifting patterns of migration and the increasing ability to determine family size can render programs obsolete and buildings useless in only a few years. Schools, for example, are built to be used by unborn cohorts of children, and hospitals should be planned with future population composition in mind. While it is still true that the impoverished are drawn to the city, the rural and farm reservoir that has made possible large flows of people to the city has significantly diminished. Natural increase is becoming a more important part of the total growth of a majority of the larger cities, with the result that more of the overall growth is occurring at the bottom of the age pyramid, and less in the young adult years where migrants are concentrated. It is of particular importance that HUD sponsor research that aims at establishing a typology of cities in terms of the age and family as well as the racial and ethnic characteristics of their populations.

2. *Migration* Studies of migration can provide HUD with information of special importance to its mission. Patterns of migration vary from city to city, and migration can change the character of a central city or suburb in a surprisingly short time. Migrants are not a random sample of the total population, and their characteristics may differ radically from those of indigenous populations. For example, long-distance migrants are, broadly speaking, characterized by higher-than-average education and occupational levels. On the other hand, there is some evidence that the mobility of certain elements of the population within central cities is associated with poor school performance and with a high degree of personal disorganization.

An educational system adapted to the needs of migrants and appealing to their aspirations can transform a people in a relatively short time—witness the disappearance of the "Okies" and "Arkies" that California sought to bar at its boundaries in the 1930's—while a lack of appreciation of their needs can create a population destined for the relief rolls. Studies of migrant experiences can set guidelines for future policies, and studies of the reasons for migration and the problems of adjustment, acculturation, or assimilation can be used to shape programs that are more immediately responsive to human needs.

3. *Fertility* New contraceptive methods and changing attitudes toward them in different segments of the population can greatly change the number of newborn children dependent on public support. At present it is estimated that one-fourth to two-fifths of Negro children born in some parts of the larger cities are illegitimate and that a substantial number are brought up in

homes without a male head. For young Negro women, the usual urban–rural differential of the past has been reversed, and the high birth rates occur in the largest cities. A high proportion of the children in poor families are born to mothers who already have five or more children. Studies of fertility patterns could indicate the elements in the population for which this problem is greatest, and what factors are associated with the production of unwanted children. Even if no special family planning programs are initiated, the presumed consequences of changing fertility patterns should be examined for their implications for future needs and demands for housing and public services.

4. *Mortality and Morbidity* Detailed studies by small areas and of small population groups will reveal problem areas and unsuspected problems. Coordination of vital statistics with hospital and with other health data is currently a neglected task. Moreover, as already indicated, there is considerable cost in lives and in health that could be prevented with known methods if the facts were effectively adduced and presented.

5. *Population Characteristics* Changes in population characteristics, some of which can be predicted, are of great importance in assessing future economic and social needs. Many economic and cultural characteristics are related to age, sex, race, and other population characteristics. The provision and placement of facilities of all sorts is related to the characteristics of population.

Demographic studies that deal with family formation and family structure are among those most needed and potentially important. Existing evidence points to the significance of the earliest years and the family context in which they are lived for subsequent development and behavior. Studies of the slum family and household arrangements are needed to determine the promise of success of programs proposed to improve the quality of life. In their absence, decisions to invest in such programs may merely signify that they appear to be well-intentioned.

6. *Probability of Radical Demographic Changes* Too little attention has been paid to the likelihood of major departures from long-term demographic trends. Thus, it appears very likely that migration will become increasingly city-to-city in character, that the influx from rural areas will diminish, and that certain ethnic or racial groups will become increasingly concentrated geographically. Fertility is falling rapidly for the population as a whole, and aid to dependent children may become less important as the proportion of the aged increases. If such changes are not carefully and continuously assessed, the cost of useless facilities and misdirected programs will be con-

siderable. In short, investigations of alterations in the directions and pace of both current and prospective urban programs will help identify the need for and the substance of new or greatly modified programs.

The Committee sees great merit in practical terms in research aimed at improving the understanding of the complex interrelationships between population size and characteristics, on the one hand, and economic and social phenomena on the other. The implications of population density at the household, neighborhood, and city levels for attitudes, behavior, and mental health are not well understood, and far too much planning is done without considering the densities at which people prefer to live. The characteristics of family units should be related to the kinds of housing that must be provided and to the use that will be made of all kinds of services. If the demographic factors were fully understood, the availability of manpower, the types of dependence, the kinds of schools, the programs and levels of assistance, and other matters of the utmost importance could be assessed far more accurately than they now are.

NEIGHBORHOOD RESEARCH

The major new area of research and action in urban development is what has been called "nonphysical planning" or, more precisely, social planning. The most appropriate unit of concern in this type of planning has to be defined in terms not merely geographic, for it is in fact a social entity given distinctiveness by a relatively bounded system of localized interaction within a small geographic locus. This entity is usually described as a neighborhood. The character and intensity of the systems of interaction vary from one neighborhood to another, and one may suppose a continuum ranging from neighborhoods with systems of interaction so feeble as to produce little or no sense of community among residents to others with interacting systems that result in a strong consciousness among residents of identity with a larger social grouping. If the neighborhood is a cell of the urban area, the conditions under which it functions well or ill are critical for urban health and development. Accordingly, they should be an important focus for behavioral and social science research.

Considerable folk knowledge exists about "good" neighborhoods, but little systematic research has been done either on them or on the conception of a "good" neighborhood. The term "good" may have as its referent an elementary school, property maintenance, contributions to and participation in civic affairs and community projects, or low levels of delinquent behavior, crime, or social disorder. These and other constituent features of a neighborhood provide observable conditions on which to base normative assessments.

If such conditions are viewed as outputs of the "neighborhood system," there is an invitation to inquire what the inputs into the system are.[8]

If the neighborhood as a system can be shown to bear an important causal relation to the functioning of schools, of normative structures, of control systems and deviance, of sense of competence and ability to affect one's own fate, of the maintenance of social and personal capital, of capacity for co-operative action, and of other matters of critical import, then research should be aimed at providing the best empirical and theoretical understanding of neighborhoods that current research capabilities permit. A theoretical understanding of neighborhood functioning should generate warranted expectations as to outcomes and should suggest strategies for effective processes of change that might avert undesired or produce desired outcomes. The development of a theoretical understanding of neighborhood functioning requires observation of a variety of neighborhoods and a conceptualization of observations and measurements that will permit making significant comparisons and the editing of theory.

In many neighborhoods, the school is the most important unifying element. The values attached to child-rearing and education in those neighborhoods are so great that the school either has or could have great salience for large numbers of their residents. Those for whom it has such salience are likely to fall into socially and politically active age groups and, as members and heads of families, to be themselves involved and concerned with the school as an ongoing institution. The interaction between a neighborhood population concerned with children of school age and the school itself is a powerful source of neighborhood structure. Current proposals for decentralization of school systems are based on the belief that significant parental involvement in the school often may be necessary to the successful functioning of the school.

Conversely, the successful functioning of the school or school system may be an excellent indicator of the health of neighborhood or community structure. Were it possible to secure readily a diagnostic instrument to evaluate school functioning, it might be possible to pinpoint neighborhoods or communities where, despite census characteristics generally associated with failure, desired results are being obtained. If the Selective Service tests could be used to discover schools and school systems where, in spite of social characteristics of students usually associated with failure in school, success is attained, it might then be possible to learn what some of the critical variables in performance are and what intervention strategies hold promise.

The school as an institution provides a focus for neighborhood interaction. Only the church provides a comparable institution. For this reason the school

[8] The ideas associated with the terms "system" and "systems analysis" are discussed in Chapter 2, pp. 17-21.

may be viewed in research terms as an instrument for diagnosis and explanation. School performance in this context is a dimension of neighborhood character and process, rather than a measure of educational success. Thus, it becomes one of the relevant entries for any one of the new systems of "social bookkeeping" that are being so vigorously pressed.[9]

In neighborhood research, sample survey techniques may not be prohibitively costly, and it may be possible to select areas for study on the basis of even partial hypotheses that would predict outcomes from the mix of social characteristics that census data can provide. The lack of fit between census-data units and neighborhoods is a research question of considerable importance, since programs aimed at larger "neighborhoods" identified by census data may not be centered on meaningful social entities from the point of view of interactive systems. Indeed, in research in this area, investigators must carefully guard against simply accepting the limitations of census data and should always take into account other survey and demographic research.

In James S. Coleman's study of educational opportunity, it was found that a child's sense of competence and feeling of ability to affect his own fate were important elements in educational performance.[10] Through the instruments Coleman devised, or through improved tools, research could be designed to discover what, if any, neighborhood characteristics are associated with a high incidence of a sense of competence. It may be that these measures would reveal what might be called (to borrow from David S. McClelland) "the achieving neighborhood." Should it appear that there are neighborhoods that possess these characteristics but that cannot be categorized as being either "middle-income" or "well-educated," and, should it then be possible to identify the variables linked causally with such "achieving neighborhoods," new instruments could possibly be developed for remedial changes in neighborhoods represented as "poorly achieving."

Related research would be that concerned with the incidence and control of deviant behavior and with differences within and among neighborhoods in orientation toward the world of work. These two areas have lacked systematic investigation, but even the inadequate data that exist serve at least as valuable indirect indicators to show varying levels of deviance by locality. More recently, improved concepts and methods for estimating the extent and control of deviance have been and are being explored in survey studies of victims of deviants. As with school performance, firm information about the incidence of deviance should permit the targeting of areas for which the grosser census characteristics would lead to expectations at odds with actual conditions.

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[9] For "social indicators" and "social accounting," see Chapter 5.

[10] James S. Coleman *et al.*, *Equality of Educational Opportunity* (Washington: U.S. Government Printing Office, 1966).

Investigations that identify neighborhoods with high expected but low actual deviance should lead, in turn, to an understanding of the variables associated with an effectively functioning normative structure under conditions that are generally assumed to preclude that possibility.

The identification and analysis of actual neighborhoods that, despite unfavorable census or otherwise determined characteristics, show favorable results in school performance, low levels of deviance, high sense of competence, and perhaps other indicators such as civic action, social and personal capital maintenance, and the like, ought to lead to first approximations of theories of neighborhood process. It should be possible for social and behavioral scientists to develop paradigms, logical relations among variables, and possibly even a calculus that would predict observable outcomes. Such theories of neighborhood process would be particularly relevant in the formulation of policies leading to the design of programmatic efforts aimed at arresting, if not reversing, long-term trends toward urban decay, social instability and dislocation, and the like.

A number of widely shared assumptions about the significance of housing and family composition for preferred human behavior and performance should be viewed as invitations to research. Thus, property ownership is receiving renewed interest as a possible determinant of community action, identification, and conservation. Political stability or instability at the national level has been associated with varying levels of property ownership. There is evidence that property ownership is positively associated with activity in neighborhood associations. It has also been asserted that home ownership is a key determinant of social self-definition. Differences in self-definition, it has been argued, may be critical in shaping the character of neighborhoods. Clearly, the validity of assumptions of this kind and of the preliminary findings emerging from limited investigations are significantly related to HUD's missions and programs and warrant additional, systematic research efforts.

It is important for HUD to learn what bearing the physical and associated social structure of public housing have on the desired social outcomes sought through the expenditure of public funds to construct or lease public housing units. Research seeking to relate physical structures to social structures to social outcomes would have significance for more than the assessment and modification of public housing programs. It is not known what influences, if any, physical forms exert on social structures. Currently, most social and behavioral scientists would support the general proposition that social structure is more likely to determine physical structure, or at least its condition, than the reverse. However, it cannot be said that research in their disciplines has firmly demonstrated this or has illuminated the interaction between the two. Clearly, where physical structure has demonstrably adverse effects on social structure, it is important for HUD to know about it. It is, of course, equally important to learn to what extent physical structures can contribute to desired social outcomes.

The family is receiving renewed attention in research related to public policies, but relatively little research has been conducted on the extent to which the presence of different proportions of families with certain characteristics correlates with and, perhaps, explains particular neighborhood characteristics. If selected family characteristics are specifically predictive of the social outcomes of neighborhoods, new strategies of intervention through public policies may be identified for dealing with the degradation of urban environments.

In many urban neighborhoods, most (if not all) of the individuals who have formal control roles reside elsewhere. Where this situation obtains, actual residents may perceive nonresidents fulfilling social control roles as an army of occupation. Virtually no intensive research has been conducted on the consequences for neighborhood characteristics of the presence or absence of those who occupy legitimate control roles. It should be easy to ascertain whether policemen, firemen, teachers, and others are residents or social absentees and then to investigate which neighborhood attributes (both positive and negative) may be associated with each of the two conditions. If this can be accomplished, new programmatic instruments may be suggested.

Present interest in school decentralization, "black power," participatory democracy, and neighborhood self-government reflect, at least in part, the hope that enhanced responsibility exercised by the neighborhood itself will contribute to improvements in the urban condition. However, passionate debate rather than dispassionate inquiry mark the efforts to experiment with the reassignment of responsibilities and functions on a neighborhood basis. Thus, the ideology of "black capitalism" represents an important example of the kind of radical institutional change from which desirable effects might flow from neighborhood social structures and characteristics. Past historical experience and the findings of research have yet to be systematically examined for the light they might throw on many of the current proposals for relocating responsibilities, functions, and roles as means for "solving" urban problems. Thus, ethnic research has led to the conjecture that certain economic and social institutions are critically important to successful ethnic neighborhood organization. Such research, built on historical inquiry and supported by contemporary research on successfully functioning neighborhoods, could illuminate understanding of the kinds of institutions requisite for, or significantly helpful to, successful neighborhood functioning.

Research directed to the development of significant indicators of neighborhood functioning would contribute not only to building up the kinds of trend data that are sorely lacking,[11] but also to an understanding of the processes and factors involved in alteration from a state of successful to unsuccessful functioning and the reverse. Thus, little systematic knowledge exists about the key characteristics and social outcomes of a stable Negro working-class neighborhood, and even less is known about how such a neighborhood changes into a slum, or from a slum into such a stable neighborhood. Research into the dynamics of social change of this kind might suggest sensitive indicators that would serve the needs of an early warning system of urban deterioration.

The strategy exemplified in the specific research recommendations set forth in this report argues, in effect, that HUD's mission of urban development could be significantly assisted by a nationally ordered research investment on problems of neighborhood processes and outcomes. Concern with model cities and urban development could be more sharply focused by treating the neighborhood as a critical unit for research and program action.

RESEARCH ON THE OBSTACLES TO PROGRAM IMPLEMENTATION

In making specific research recommendations to discover the sources of obstacles to the successful implementation of present programs and, thereby, to discover the means to circumvent or remove those obstacles, the Committee is fully aware that such research is not unrelated to the design of new programmatic instruments. However, the Committee has separated its recommendations for research on obstacles from its recommended research and development requirements for the design of new programs in order to emphasize that a good deal more must be learned about where the actual obstacles to program implementation exist before present programs are drastically altered or new programs substituted.

The Committee's recommendations for specific research aimed at discovering the sources of obstacles to the realization of HUD's programmatic intentions are ordered in terms of (1) the character of local governance, (2) fiscal policies and the provision of public services at the local level, (3) the effects of legal controls, and (4) the social and institutional setting of housing programs.

Character of Local Governance The solution to the problem of the obstacles that may inhere in the local administration of federal programs is sometimes conceived as meeting a need to modernize local governments. To the extent

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[11] See pp. 68–69.

that federal funds can be instrumental in assisting local governments to become more effective in meeting the requirements of their constituencies, it should be recognized that "modernization" involves more than a simple reordering of local administrative structures. Appointed and career officials, working within the complex and highly specialized bureaucracies of the nation's larger cities, have come to play an ever-larger role as originators, designers, and executors of innovative policy. But, local administrative bureaucracies are only one segment of the much broader, apparently short-lived coalitions of interests that emerge around specific issues and affect their outcomes. A good deal more must be learned from systematic research on these fundamental processes of governance before suitable means can be identified and implemented to "modernize" local governments.

As a means to achieving a better understanding of the interactions among such leader and client groups at the local level, useful knowledge should be gained from research on the behavior of political leaders, voters, professional administrators, and special-interest groups in situations in which local government is called upon to create or administer new resources with the intention of producing desired social change. Economists and political scientists might collaborate in useful research on the interests that prevail and the mechanisms that operate in the allocation of municipal services, but there is a concurrent need for research on the responses of local governments to problems in which calculations of utility and efficiency loom less large than considerations of societal conscience and responsibility.

The continuing emergence of newly articulated public interests suggests that local governments will have to become increasingly responsive to existing [illegible] in the direction of decentralization. A thorough survey of the successes [illegible] politan reform—attempts that were, for the most part, aimed at increasing executive centralization—might prove to be a useful basis for assessing the costs and benefits likely to be associated with the transfer of decision-making authority to the neighborhood level. Further, studies of previous reform efforts would provided a clearer sense of the ways in which political controversies are resolved and of the extent to which key decisions made at one point in history place limitations on the capacity of future leaders to bring about meaningful changes in the same areas.

The Department's ability to evaluate the impact of its programs on their intended beneficiaries could gain from a better understanding of the ways different types of local governments function in different social environments. Specifically, research is needed on the effect upon local government's performance of the size of the area governed, of its population density, ethnic composition, economic homogeneity, ability to mobilize political commitment, and the residence locations of its leaders. Detailed knowledge from such investigations would allow a more reliable determination of the extent to which dissatisfactions with or failure of specific aspects of particular programs flow from weaknesses in the program itself, from the influence of the opinions of groups from outside or within the area of immediate program interest, or from conditions in the political environment in which it is administered that may be unrelated to its character.

The value of revising legal methods for securing more favorable results in urban programs may be facilitated by the systematic examination of present legal methods for organizing local governments. These studies should concentrate on gaining more systematic knowledge about the methods of incorporation, annexation, and interlocal cooperation, including governmental cooperation in metropolitan decision-making through councils of governments and related metropolitan planning agencies.

Measuring Needs and Preferences Until such time as a reliable set of measures or indicators of the service requirements and desires of urban residents can be developed and efficiently used, the needs and preferences of city dwellers will continue to be imperfectly revealed through the formal, aggregative mechanisms of the political process.[12] Thus, research is needed on the ways in which, at the local level, voters, leaders, and organized interests articulate their perceptions of the necessary and desirable, and of the ways in which variations in local government structure, community history, and social values facilitate or frustrate the ability of individuals and groups to make their preferences influence public policy. This research should help the Department address itself more effectively to the conflicts that develop between its clientele's perceived and/or expressed wants and the Department's own understanding of the demands of rationality and efficiency in the selection, design, and administration of programmatic efforts. An additional important gain from research on the public articulation of individual needs and preferences is the contributions it could make to the development of a more reliable set of relevant social indicators for assessing the impact of programs in the future.

Fiscal Policies and Public Services at the Local Level A major factor influencing the quality of life in the urban community is the public services provided. Local governments continue to be responsible for the supply of those public services without which urban living is either completely unthinkable or, at best, inconvenient in the extreme. Thus, the protection of life and property, sewerage and sanitation, as well as other aspects of public health, water supply, streets and traffic control, parks and other recreational services, land use planning and zoning, are all primary responsibilities of local units of government. In addition, local governments must carry fiscal and administrative responsibility for the provision of primary and secondary education, an increasing responsibility for education beyond the high school, and a substantial part of the costs of welfare services and income transfers. The expenditures incurred by local governments for the provision of these services and transfers now exceed $60 billion per year, of which approximately 70 percent is financed from local resources and the remainder from state and federal grants and revenue-sharing.

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[12] Alan K. Campbell and Jesse Burkhead, "Public Policy for Urban America." *In* Harvey S. Perloff and Lowdon Wingo, Jr. (eds.), *Issues in Urban Economics* (Baltimore: The Johns Hopkins Press), 1968, p. 589.

These expenditures have increased approximately tenfold since the end of World War II. But there has not been an accompanying expansion in revenue sources available to local governments. Rather, their major source of revenue continues to be the property tax. While local sales and income taxes have increased in importance in recent years, their widespread and intensive use is still restricted to local governments in a handful of states. Sales, excise, and income taxes still account for only about 10 percent as much revenue as do local property taxes. This is the case despite the fact that the property tax, as applied to the property of households, is a regressive, discriminatory levy that imposes a major burden on a basic necessity of life in the form of houseroom or shelter. In its application to business and industry, the property tax is a tax on input of capital and land that varies in its impact directly with their importance to a firm's operation. It has been suggested that the effect of the property tax is to discriminate or discourage improvements in the quality of both housing and business and industrial property. Since improvements tend to increase assessed valuations, the property tax tends to penalize such

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improvement.

Almost $20 billion per year is distributed by the states to local units of government. The formulae under which these funds are distributed need close reexamination; even superficial inspection suggests that major changes are needed, changes that reflect the enlarged and changing functions of local government and the redistribution of population from rural–agricultural pursuits to urban working and living.

The increasing complexity of governmental structure within metropolitan areas and the changing economic complexion of the metropolitan community have rendered obsolete many of the fiscal instruments and procedures of local units of government.

Such sources as the recent Kerner Commission report[13] make it clear that dissatisfaction with the inadequacies of local public services constitutes a major source of irritation for they deny to residents of low-income areas access to opportunities and amenities to which they are entitled. Inadequate police

[13] *Report of the National Advisory Commission on Civil Disorders* (Washington: U.S. Government Printing Office, 1968).

and fire protection, grossly inadequate garbage collection and other sanitation services, inability to enforce building codes, poor or nonexistent recreational facilities—all these inequities appear in virtually any survey of conditions that exist in low-income neighborhoods. It seems obvious that improvement in the quality and quantity of these services is a prime requisite now. At the same time, it is just as obvious that local units of government are facing grave difficulties in finding the funds with which to finance such improvements.

The foregoing remarks suggest some of the urgent research topics relating to fiscal matters:

1. *Impact of the Property Tax* Little systematic knowledge exists about the actual impact of the property tax on many important economic decisions, including the decisions of firms to locate in one community or another, particularly within the metropolitan area. More generally, in order to evaluate the impact of the property tax, a great deal more than is now known is needed to understand its effects on the patterns of land use within the metropolitan community. It might also be suggested that the property tax contributes to the deterioration in the quality of housing and to the development of blighted areas or slums. The obvious research question here is one that relates to the effect of the property tax in discouraging improvement and/or renovation of housing design to upgrade it to adequate standards. It is worthwhile to examine alternative tax policies aimed at achieving results in terms of efficiency in land use and encouragement of improvement in the quality of buildings. Thus, the need exists for a substantial series of empirical and theoretical studies. The laboratory setting is present. Unfortunately, it has not yet been thoroughly explored.

2. *State Aid* Recent studies make it clear that many present systems of state aid to local units of government are poorly designed and are extremely unlikely to achieve their objectives. Unfortunately, the facts have not been assembled with regard to the nature of these systems, nor has there been an adequate amount of research to identify the norms that would make possible objective judgment on what these systems should achieve and how they might do so. It seems clear that the states must assume larger obligations with respect to services for urban residents. The question remains as to how they might best proceed to do so. One alternative, obviously, is to enlarge and redesign the system of state aid. There are other possibilities that should be explored, such as expanded local supplements to state-administered taxes, state assumption of such functions as major welfare programs, and others.

3. *Location Decisions* It is commonly asserted that one of the major factors contributing to local fiscal problems lies in the exodus of middle- and higher-income people to the suburbs, while their places in the inner-city are

taken by lower-income people who place greater demands on public services. To what extent do the location choices of middle-income people represent their location preferences? If lower-status residents' location decisions are constrained, is it because of their low income, or because of institutional barriers such as dual-housing markets?

The increasing tendency of industries to locate in the suburbs may add to the tax resource problems of the central city. At the same time, however, the suburbs are also burdened with high costs, particularly high capital costs, especially in the provision of primary and secondary education and with respect to other public services as well. There is a need to know much more about the consequences of the changes involved, both for central cities and for their suburbs. How great are the difficulties encountered by the central city as a result of zoning practices and other devices that tend to exclude low-income residents from the suburbs? To what extent does the responsibility for financing the costs of public services to inner-city residents rest with the larger community? Is the larger community appropriately the metropolitan region, the state, or the federal government? And, wherever the responsibility may lie, what are the most appropriate alternatives available for financing the costs of fulfilling the responsibility?

The Effects of Legal Controls Pervasive societal change can result from the use of law as an instrument of social reform. The United States Supreme Court's recent decisions on open housing and welfare requirements and legislative changes in New York and elsewhere, which strengthen the hand of slum tenants, merely underscore this point. These changes have obvious relevance for HUD, and it is of primary importance for the Department to underwrite extensive research on the basis for and operation of legal controls which affect its policies and programs.

While there is a body of literature in law review journals and elsewhere on the doctrinal aspects of the relevant laws affecting urban problems, there has been very little work on how legal controls actually operate. An evaluation of the impact and operation of existing legal programs is a necessary preliminary step to revising their content. This research should be empirically based and systematically organized within one or more institutional frameworks. Several schools of law and related law and society programs in a number of universities represent existing, potentially suitable capabilities for accomplishing the specific research needs outlined below.

A research program that is also concerned with the legal aspects of the housing problem is discussed elsewhere in this report.[14] Here, the emphasis is placed on needed legal research on the subject of land use and development

[14] See pp. 42–43, 46.

controls. Commonsense understandings of development control might favor the belief that decisions about land use and development are reached on the basis of predetermined decisions made through the planning process and its complementary regulatory tools, such as zoning ordinances. In fact, evidence suggests that land development decisions are negotiated through a bargaining process between developers and regulating agencies. Research should be initiated to understand more thoroughly the trade-offs in a bargaining process that might produce distorted outcomes relative to programmatic aims. Other important land-use and development problems need to be researched. To what extent do suburban communities use restrictive zoning policies to exclude low-income and moderate-income housing? How important has the comprehensive plan been in zoning decisions? How effective has zoning been as a control device in different areas of the metropolis? Density controls commonly are applied in zoning regulations, but functional criteria of density control are not firmly established. The importance of traffic factors in zoning decisions may be underestimated; one leading authority has suggested that one-half of all court decisions in zoning cases involve a shift from residential to commercial use along heavily traveled highways.

Too little attention has been directed to the way in which public agencies with developmental powers make decisions affecting project character and project priorities. Research efforts should concentrate on such problems as route selection in highway programs and project site selection in programs such as public housing, urban renewal, and model cities. The role of comprehensive planning in federal-aid programs is presently under study, but research on this problem should be broadened to include an extensive review of the effectiveness and usefulness of the comprehensive plan as a guide to public decision-making. As suggested in a recent study of slum landlords,[15] the by-product effects of programs that substantially change the character of the physical environment need investigation. The history of land-disposition practices by urban renewal agencies presents a rich opportunity for research into methods of land disposal by government agencies and an opportunity to review discretionary and nondiscretionary methods of land disposition in government programs. Finally, the need exists for systematic investigation of legal reform as an instrument of social change. Open-housing legislation provides a case in point.

The possibility that programmatic intentions are diverted by the intrusion of unanticipated or poorly understood processes should be systematically investigated by studies of the ways in which the private sector organizes itself to participate in land development and in government-based programs of community improvement. Research should be initiated to provide systematic

[15] Daniel R. Mandelker and David G. Heeter, "Investment Activities of Relocated Tenement Landlords–A Pilot Study." *Urban Law Annual* Vol. 33, 1968.

data on the organization of the lending, insuring, and building components of the housing industry, the organization of "new town" entrepreneurs, the organization of private redevelopers for participation in urban renewal, and similar programmatic efforts.

The Social and Institutional Settings of Housing Programs A familiar approach to housing begins by assuming that if existing codes were enforced, the quality of housing would be maintained and improved. This assumption leads in turn to research that will suggest how local housing codes can be more effectively enforced. The workability of the codes as presently formulated is seldom questioned.

An alternative approach to a research strategy directed at the successful implementation of housing programs might begin from a wider perspective. Initially, attention should be directed to methods of measuring the housing problem. Present measures assessing housing quality by physical condition and deficiencies of physical condition, aggregated for cities and sections of cities, are presumed to provide an estimate of housing needs. Very little has gone into appraising the validity of the measures that have been used to evaluate housing quality.[16]

Exclusively physical measures of housing quality may obscure important differences among different segments of the population in the social definitions of preferred or acceptable housing. These differences may be essential to formulating successful housing policies and programs. Creating alternative measures of housing quality on the basis of additional research on housing preferences is directly relevant to understanding the institutions and processes that together make up the housing market. For example, if understanding the process of neighborhood growth and stability is necessary to the formulation of effective programs of government and private action, then measures of housing quality must be sensitive to meanings of "quality" in the context of any given neighborhood. It may be, for example, that space and privacy requirements vary among different segments of the population quite independently from physical indexes of housing quality.

It is important for the design of successful housing programs that the housing market also be researched in terms of its social and institutional dimensions. Is the housing market functioning properly when large vacancy rates appear in ethnic slums, on the assumption that an excess of supply will have the effect of lowering rentals? Or does a high vacancy rate lower the owner's incentive for code compliance? On what basis do housing suppliers make decisions about investments in housing for low-income groups? Some economists assume that housing investors are indifferent to the areas of the city in which they invest. Research is needed to assess the validity of this assumption. Some estimates about housing demand assume that Americans generally underspend for housing relative to other consumer items. Research is needed on the factual basis of this assumption. If the assumption is correct, why does underspending for housing occur? What changes in education, employment, and social adaptation produce increased spending for housing?

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[16] For a recent appraisal of the present measures of housing and neighborhood quality, see U.S. Bureau of the Census, *Measuring the Quality of Housing: An Appraisal of Census Statistics and Methods.* Working Paper No. 25, Washington, D.C., 1967.

Research that contributes to better understanding of the institutional character of the housing market and private decision-makers' definitions of consumer habits might result in improved understanding of the obstacles to implementation of housing programs and suggest ways of altering the programs to make them more successful. We know, for example, that there is a large-scale withdrawal of conventional low-equity financing from housing that is defined as deteriorating in terms of physical measures and from ethnically changing areas of the city. Additional research is needed on the extent of this practice and on why the withdrawal occurs. We know that installment financing and similar methods of housing purchase that are disadvantageous to the housing consumer are often epidemic in slum areas, but we need additional research to understand the institutions that support these practices and the reasons why purchasers of housing in these areas are so susceptible to these practices. We know that housing abandonment is prevalent in slum areas, but additional research is needed to learn what underlying pressures account for this.

A full-scale examination of housing management practices under federally subsidized programs is important for identifying the conditions of housing maintenance. Federal subsidy programs aimed at bolstering the tenant's ability to rent housing should be examined in light of the results of research on the relationship between home ownership and willingness to maintain housing. Also, systematic follow-up studies on the contribution of more recent federal innovations in housing policy should be initiated. Public housing authorities may now lease rather than build public housing units, but research is needed to learn why some cities apparently have restricted their leased units to elderly white tenants.

Finally, research should be directed to the possibility that obstacles to the implementation of housing programs may be a result of the goals of the programs themselves. The legacy of past approaches to the housing problem may in fact be a series of disconnected methods of action that are counterproductive in their total impact. Historical research might serve to confirm the possibility that present housing programs were born out of policy intentions that, in light of present knowledge, were either poorly informed or directed to meeting social needs that no longer prevail.

THE SEARCH FOR NEW PROGRAMMATIC INSTRUMENTS

The Committee assumes that the results of research designed to identify the obstacles to the successful implementation of HUD's present programs will, at the same time, suggest ways of (1) removing or reducing the influence of these obstacles, (2) altering programmatic efforts to make them less susceptible to distorting influences in the process of their administration, or (3) designing new and more effective programmatic efforts. Similarly, the Committee believes that its research recommendations for planning and information systems will result in more reliable estimates than can be made on the basis of available evidence for predicting the kinds of social and individual needs toward which future programmatic efforts should be directed. While all the foregoing specific research recommendations should permit HUD to anticipate the future with increasing sophistication, the Committee is constrained in its aspirations by a relevant remark of Sir Peter Medawar:

> Unfortunately, it is impossible to predict new ideas—the ideas people are going to have in ten years or in ten minutes time—and we are caught in a logical paradox the moment we try to do so. For to predict an idea is to have an idea, and if we have an idea it can no longer be the subject of a prediction.[17]

Nevertheless, the Committee is impressed with the apparent insufficiency of HUD's present program for ameliorating the urgent and complex issues to which they are addressed and it recommends that HUD initiate research to explore the feasibility of additional intervention strategies. While Medawar's caution is accepted by the Committee, his further words serve to encourage it:

> Most people feel more confident in denying that certain things will come to pass than in declaring that they can or will do so. Many a golden opportunity to remain silent has been squandered by anti-prophets who do not realize that the grounds for declaring something impossible or inconceivable may be undermined by new ideas which cannot be foreseen.[18]

In keeping with the Committee's observation that research on the design of new programmatic instruments is closely related to research on the discovery of obstacles to the successful implementation of present programs, the Committee has ordered its specific research recommendations in similar terms under both categories. Accordingly, the Committee's recommendations for specific research related to the design of new programmatic instruments are classified as (1) research on local governance, on fiscal policies, and on the provision of public services at the local level; and (2) the legal setting of housing programs.

[17] Sir Peter Medawar, F.R.S., "A Biological Retrospect." *Nature,* Sept. 25, 1965, p. 1327.

[18] *Ibid.*

Governance, Fiscal Policies, and Public Services at the Local Level Present proposals for restructuring local government frequently advocate the transfer of some municipal functions to other forms of government. Fragmentation of government within metropolitan areas has often been approached as a problem to be solved primarily or exclusively through consolidation, federation, or some other form of governmental reorganization. Enough experience has been gathered in the past few years in this country and in Canada to permit the conduct of studies designed to answer questions in this area. Obviously, however, there are also major costs associated with reorganization. They may be economic or fiscal, but they may also be political and social. Among the political consequences of consolidation, for example, is the loss of influence of entrenched groups, as well as the further weakening of the political influence of minority groups within local government. Other political-economic costs that may be involved would include those associated with the reduction in freedom of choice available to people who now may choose among a variety of places of residence within a metropolitan area, and centralization of political power and influence, as well as loss of incentives to participate in the political process. Clearly, costs and benefits must be weighed. In addition, various alternatives to federation or consolidation must be explored. Most experts would agree that while such functions as planning, sewage disposal, and arterial highways, as well as mass transportation can be carried out most effectively by area-wide authorities, decentralization and even fragmentation in the provision of other services or in the performance of other functions often carries with it positive values or benefits. This is an area in which cost–benefit types of analysis would be useful.

A closely related research problem is the question of the appropriate role of the federal government vis-à-vis the states and local units of government in the financing and administration of public services now financed and administered primarily or exclusively at the local level.

It must be recognized clearly that ours is a very mobile society, and that the failure of public services in one community may lead to difficulties in another that may be far removed geographically. Moreover, in such a highly mobile society, some of the most desirable tax bases may also be highly mobile and, therefore, tapped effectively only through the agency of the federal government. The Committee recommends that these questions be carefully researched.

A neglected source of local revenue may exist in user charges of various kinds. In most localities the charges now cover an inadequate array of services or privileges, and those charges that are imposed typically reflect outdated objectives and approaches. In the interest of both increasing revenue and improving efficiency and resource allocation, this is a highly relevant area for systematic research.

Local communities have for many years been competing to attract industry on the assumption that more industrial activity would ease the financing burden on local residents. Yet, it seems clear that at least some industries may add more to local governmental costs than to potential local revenue. Research is recommended on the relationship between growth in local industry and commerce and the demand for and supply of local public services and fundings. Some preliminary studies have been conducted on this subject but additional systematic, definitive inquiry is needed.

Finally, essential information is lacking on the likely fiscal needs of individual units of government in the future and the capacity to finance them. This is an area in which universities or other research institutions may be able to provide simple, effective techniques that could then be applied readily by in-house staffs at the local governmental level. At least some aspects of the crisis facing the cities now might have been avoided if such projections had been developed ten or twenty years ago. Conceivably, they might have led to means of financing local public expenditures different from those now being applied. They might also have provided more adequately for meeting the needs involved and might even have had beneficial effects on the pattern of location of both residents and industry within metropolitan areas.

Legal Setting of Housing Programs The Committee has recommended research that will lead to better understanding of the ways in which legal controls operate as constraints or limitations inhibiting the realization of policy intentions. It has also urged that it is equally important for HUD to view the legal process as a powerful instrument of social intervention and change. For example, it is presently assumed that particular types of tenure, such as ownership of title, must be associated with a physical as well as a legal dimension. That is, ownership means a particular property at a particular place and time. Severing the legal requirement of the physical dimension of home ownership might have important consequences for improving the quality of life in the inner areas of the city, and elsewhere as well. Ownership of a home might be legally transferrable, within limits, under a program of federal guarantees that would allow the homeowner to transfer his title to another area of the city without penalty. While this example is intended to illustrate an area of research rather than to recommend any particular policy, the Committee believes that these and other potentially beneficial programs should be investigated in detail.

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Recommendations on Research and Development Capabilities

Research and development activities must be related to the manpower and institutional resources available for conducting them. This requires that a program for investment in R&D be accompanied by programs designed to (1) assure access to and effective use of available R&D capabilities; (2) enhance existing manpower and institutional resources; (3) translate potential capabilities into actual ones; and (4) help bring into being and assist in the growth of new R&D institutions, should they be required. In the absence of planned efforts along these lines, there is no assurance that investments in R&D will produce results useful for the entire range of decision-making involved in planning, implementing, evaluating, and reformulating or modifying policies and programs.

Moreover, if HUD hopes to utilize social and behavioral scientists and to bring the results of their research to bear upon complex human problems with some approximation of the success that the federal government has had in engaging the talents of natural scientists, it will have to guard against a tendency all too frequently exhibited by large organizations. This is the disposition to behave as if the substance of research and development; the production, coordination, dissemination, and use of information; and the design and realization of a network of corresponding research instrumentalities are separate, autonomous undertakings. They are inseparably linked and interacting components of a total enterprise. Coherent applied research on urban problems will be feasible only to the extent that the instrumentalities that HUD establishes as its distinctive research arms are institutions whose research activities are sharply focused and purposeful and, therefore, coherent.

In light of these general considerations, the Committee endorses HUD's present policy of having most of its research accomplished through extramural contracts and grants. The inhouse capability of HUD for conceiving, managing, monitoring, and utilizing extramural R&D capabilities should grov in pace with the development of extramural capabilities.

To have access to the required kind of network of related extramural research and development capabilities, HUD must not only mobilize existing research capabilities so as to bring them more effectively to bear on issues of social policy, but it must also create new institutional capabilities to fulfill those mission-oriented research needs for which existing resources are likely to be unresponsive or unsuitable. The extent to which even a well-conceived and generously funded extramural network of R&D capabilities will contribute to realizing HUD's missions will depend on the competence of the Department's inhouse capabilities.

Even the most imaginative. coherent R&D programs, capable of generating powerful new insights, will be of little use to the cities unless the means are found for translating research findings into policies and programs that are useful to both the Department and the cities. The Department must, therefore, have agents and centers that make the connections between the research establishment and the city policy-makers. In this connection, Harvey Brooks has observed that

> The definition of its mission is one of the most important considerations in establishing a new research organization or reorienting an old one. In evaluating the performance of such an organization in applied research, the emphasis should be on the performance of the organization as a whole rather than on its individual components. Good applied research is of little value if the mechanisms do not exist to translate research results into goods, services, or operations.[19]

In fashioning a network of research capabilities, HUD will, of course, be constrained by the availability and interest of people and institutions. It will have to decide which aspects of its research and development needs are likely to be best met by university, industrial, nonprofit, municipal government, inhouse, or other capabilities. The distribution of R&D effort should not be decided on doctrinaire grounds. Each part of the total research and development community can be drawn on to contribute to the achievement of HUD's mission. In the recommendations that follow, the Committee indicates what it believes to be an appropriate distribution of R&D tasks and activities.

[19] Harvey Brooks, "Applied Research Definitions, Concepts, Themes." In *Applied Science and Technological Progress.* A Report to the Committee on Science and Astronautics, U.S. House of Representatives, by the National Academy of Sciences, June 1967, p. 46.

URBAN INSTITUTES

The problems of the city are multifaceted, complex, and only partially understood. Yet, precisely because they are so diffuse and poorly understood, so difficult to fit neatly into the conceptual and knowledge structures of any of the various scientific disciplines, they must be attacked systematically, on a continuing basis, in multidisciplinary, coherent research institutions. The postwar years have taught at least one lesson concerning the use of scientific knowledge to resolve practical problems: Successful applications of science can be achieved by institutions committed to sharply identified missions, whose staffs are encouraged to transcend narrow loyalties to specific disciplines or technologies and to explore innovative approaches to the problems on which they are working. There is, consequently, reason to believe that successful applied research on urgent societal problems will be conducted if, among the several types of extramural capabilities utilized for its R&D programs, HUD calls upon coherent, multidisciplinary institutions. The Committee visualizes the Urban Institute as serving this function and being a central element in HUD's network of R&D capabilities.

In addition to being coherent and multidisciplinary, such institutions as the Urban Institute (UI) must have continuity. They must have the commitment, professionalism, and organizational memory that come only with long-term concern with the problems of the city. This means that HUD will have to be prepared to enter into long-term contracts with research entities of this kind.

Equally important, urban institutes must maintain intimate ties with local urban institutions, including local research resources wherever they exist. This is necessary to provide a testing ground for ideas generated in the urban institutes and to allow for a feedback to the institutes of the actual impact of federal programs on the people of the city.

Given the magnitude and the complexity of the tasks to be accomplished, it is probable that several urban institutes will need to be established with broad but clearly defined problem-oriented missions and with multidisciplinary staffs of critical size. In establishing these new capabilities, HUD will obviously want to exercise care by investing in planning activities. These activities should examine in detail the design of the urban institutes in terms of mission, size, and character of staff, and location and relationship to other capabilities, including the inhouse capabilities of the Department itself.

The Committee believes that the urban institutes should have a continuing functional relationship with HUD, but that the latter should leave to the institutes themselves the task of working out important parts of their grand strategies for research, as well as responsibilities for their detailed operations. Moreover, since the institutes would receive support from various segments of HUD as well as from other government agencies concerned with the cities and urban problems, they should also be given the task of developing ways of integrating R&D assignments that mirror the inevitably specialized views of the different departments and agencies they utilize.

The Committee endorses the establishment of the country's first Urban Institute and the plan under which it will operate, with a staff of about 100 professionals and with funding that would build up from the level of about $1 million to $5 million annually, of which HUD's share would come to more than half.

The Committee is convinced that a single Urban Institute of this size will be insufficient to meet the research needs of the Department, of other federal agencies, and of state and local governments. Therefore, it expects HUD eventually to participate in the creation of about six other urban institutes located in different parts of the country. Each of these additional institutes should have a different focus and core in relation to overall urban research and development needs, not only of the Department and the federal government as a whole, but also of the society. Accordingly, the Committee stresses the importance of defining the distinctive character or focus of each of these additional institutes. While the assignment of a special purpose to each of the institutes has implications for special staffing, the principle of creating multidisciplinary staffs, by drawing on all the disciplines that relate to urban affairs, should be firmly maintained.

The Committee recommends that HUD, in undertaking to bring additional institutes into being, examine the opportunities for doing so by modifying or expanding existing research centers now associated with other federal agencies, private organizations, or universities. For example, existing electronics centers associated with government agencies might serve as the foundations for institutes that could work on HUD's new research and development program in urban communications. Several universities already have, or are in the process of creating, problem-oriented urban research centers utilizing all relevant disciplines. One or more of them could be expanded and reshaped to constitute a full-fledged Urban Institute.

UNIVERSITY RESOURCES

In addition to establishing new research capabilities of a continuing, institutionalized character that meet the criteria of coherence and multidisciplinary scope, the Committee urges HUD to take advantage of the potential resources for the conduct of urban R&D that are not being drawn upon effectively. Foremost among these potential resources, of course, are the universities. In developing a strategic approach to utilizing university-based resources by way of a variety of incentives, HUD will want to take cognizance of what other government agencies have been able to accomplish. For example, interdisciplinary centers of competence in the materials sciences at a number of universities, serving the needs of the Department of Defense, have been created by an Advanced Research Projects Agency program through institutional funding. This suggests that such funding might be used to bring urban institutes into being on several campuses. Universities have successfully managed federal contract research centers for a number of departments or agencies, including DOD, AEC, and NASA. In some cases, these centers have far larger staffs and operating budgets than the universities that manage them. There is good reason to believe, consequently, that universities can be identified that could effectively help create and then manage coherent urban institutes under contract with HUD. These institutes could be either independent and virtually autonomous or they could interact intimately with the university.

Institutional grants are still another mechanism for utilizing university resources. They may be used to support research on urban problems in particular departments or schools, to educate and train urban-related professional and scientific manpower, or to enable an institution to introduce changes in structure or organization, if it is so disposed, so that its scientific resources can be more relevantly and readily deployed on research and teaching bearing upon urban affairs. In connection with the last point, several possibilities are open to HUD. It could provide, for example, institutional grants to universities in which efforts are either under way or contemplated to restructure traditional schools of architecture or urban planning and design, or to create new ones.

The use of behavioral science knowledge and behavioral scientists in managing the problems of the city will require an expanding base of fundamental knowledge. This is needed to provide the fresh insights, newer methodologies and techniques and, perhaps most important, the people who will be able to translate and transmit a growing body of knowledge to decisionmakers. The Committee recommends, therefore, that HUD accept a responsibility for supporting basic research in the social and behavioral sciences, as well as in the natural sciences, as one way of contributing to the application of scientific knowledge to problems of the city. This recommendation simply recognizes the large fraction of creative social and behavioral science capabilities located in the academic world and the fact that the universities are a major source of manpower, both for urban research and development activities and for governmental service on all levels.

University resources are, of course, being tapped for work in the urban field. Urban research institutes or centers have been established at probably more than 100 academic institutions. Several of them are active participants

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in local urban development programs. Interdisciplinary programs in urban studies have been instituted or are under consideration in a number of universities, and enrollments in urban studies programs appear to be rising. These developments are recent and, in some cases, have been forced upon the universities by community or student pressures. Several factors have served to retard a fuller realization of university potentialities. Particularly important are the relatively limited development of academic interdisciplinary research in the social and behavioral sciences and the widespread lack of departmental interest in interdisciplinary educational programs. Moreover, since such research and educational programs usually depend on nonuniversity sources for support, their existence is frequently precarious.

Nevertheless, interest in urban research is high on many campuses, and the capability for it has been repeatedly demonstrated.[20] Even relatively modest investments could greatly increase university potentialities for research and training and, at the same time, secure the cooperation of the universities in local urban developments. In aiming at these objectives, HUD should seek to support not only the more fully developed and, therefore, more promising programs, but also those that exhibit some originality and permit comparison among different types of programs. It should also seek to initiate programs designed for practitioners and for introducing undergraduates to urban problems, as well as for expanding the opportunities for graduate and professional training.

The Committee recommends that HUD's support of university research take several forms:

1. A small number of institutes or centers, chosen for the competence of their staffs and for their variety of interests and locations, should be given continuing support. They should be viewed as complementing the urban institutes in the sense that they would focus less emphasis on immediate problems and more on the long-term development of ideas. If HUD's budget permits it, such institutes or centers should be spread throughout the country on the basis of systematic criteria and located in or near medium-sized cities as well as metropolises.

2. The Department should support, by grant or contract, unsolicited as well as solicited proposals that meet criteria of merit and quality. Some predetermined research needs can best be met through contracts with university-based institutes or centers. But it cannot be imagined that the De-

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[20] One example of university interest in urban research is in a recent report concerning the University of California: "President Charles J. Hitch called on the chancellors of the nine university campuses for an inventory of research activities directed to urban issues such as finances, administration, welfare, transportation, police, and schools. . . . To coordinate the new program, the president plans to form a special committee of faculty members, and student representatives." *Saturday Review,* June 15, 1968, p. 73.

partment will be able to define and foresee all its research needs. Consequently, unsolicited research proposals should be welcomed as a means of encouraging the flow of new ideas to HUD and the mission-oriented urban institutes, for maintaining continuous contacts with academic research communities, and for attracting graduate students to urban research and training them in it. They also would give HUD access to researchers who prefer to work alone rather than as part of a team.

The Committee also recommends that HUD support university education and training programs related to urban needs in a variety of ways. The support programs of other departments and agencies for curriculum revision, facilities, and fellowships, both predoctoral and postdoctoral, have produced benefits that should not be denied to the Department.

Most university curricula in the social and behavioral sciences are not sufficiently flexible to facilitate the development of a coherent approach to urban studies. Strengthening undergraduate offerings and developing programs for training urban researchers and practitioners at the graduate level require the introduction of new courses cutting across disciplinary lines. They may also require expanded or new facilities, such as urban simulation laboratories. In the training of practitioners especially, provision should be made for practical experience within urban areas. A suggestive departure in Ph.D. programs is now being attempted at the State University of New York at Buffalo, with the elaboration of a new program "in the Policy Sciences [which] aims to produce social scientists competent to fuse inquiry with action in an effort to meet societal needs for the clarification of goals, the rationalization of policies, and the improvement of organizations."[21] Another effort to escape from the limitations created by departmental organizations (and disciplinary separatism and myopia) at the graduate level is being made at the University of California at Irvine, where the organizing principle adopted is that of temporary, problem-defined research teams rather than traditional departments.

Fellowship programs should be aimed at both doctoral and professional-school students and should be for the number of years optimally required for the degree. Doctoral dissertation research grants, similar to those provided by the National Science Foundation, are another important means of support. Provision should also be made to support internships in governmental agencies, urban research institutes, and metropolitan demonstration centers.

These approaches to enhancing manpower resources in urban-related fields can be supplemented by a program designed to make possible inter-

[21] "A Doctoral Program in the Policy Sciences." The Faculty of Social Sciences and Administration, State University of New York at Buffalo (mimeograph, Feb. 1968), p. 1.

change between the universities and the nonuniversity urban institutes and Municipal Development Centers discussed in the following section. Faculty members should be encouraged to spend some time in such organizations and in HUD itself. At the same time, members of the staffs of HUD, of the urban institutes, and of the Municipal Development Centers should be encouraged to teach or undertake research within universities.

Just as HUD can find several ways to realize the potentialities of academic institutions for research and training with respect to its needs, it can also identify several means for utilizing the university as an agency for public service. This aspect of university functions could be strengthened, for example, through the support of consultative services over a wide range of disciplines. Particularly in the training of urban practitioners, the university could take part in the development of the local urban area, with the city serving as its laboratory.

The Committee takes it for granted that HUD recognizes the contributions that can be made to the supply of less-than-professional manpower for urban needs by making special efforts to provide lower-income city residents with access to the educational and occupational opportunities that will allow them to develop the required skills.

The Committee's recommendations for enlisting university resources are consistent with the strategy of providing incentives to mobilize and channel existing capabilities in behalf of HUD's R&D needs. They are made with recognition of the need to avoid exacerbating the internal tensions, strains, and difficulties currently experienced by so many major academic institutions. The programs proposed represent incentives for redeploying university interests, concerns, and resources, but not for tempting academic institutions to engage in activities for which they are neither designed nor equipped.

MUNICIPAL DEVELOPMENT CENTERS

The Committee endorses HUD's Municipal Development Center (MDC) experimental project as a worthwhile attempt to nurture much-needed research and development capabilities at the local level. However, it emphasizes that the range and scope of the functions to be performed by the MDC's must be greatly expanded before they can assume their proper role in assisting local decision-makers, in serving as field laboratories, and in providing information for national urban policy-making, for example.

The ultimate success of HUD's programs, however well conceived they may be, depends in large measure on the understanding, competence, and energy of the public officials who administer them locally. It is of crucial importance, therefore, to create research and development capabilities serving municipal and metropolitan governments, which correspond in function and quality to HUD's inhouse research and development capabilities. Municipal and metropolitan governments, too, must have staffs and elected officials capable of generating and monitoring research, and of translating its findings into policy- and program-relevant activities.

The experiment with establishing MDC's should be conducted so as to be consistent with the building of external research and development capabilities, that is, to achieve as wide a variety of forms, competencies, and end-products as possible from the investment of scarce resources. The MDC experiment should be viewed as a concerted attempt (1) to provide for mutually profitable relations between researchers and local decision-makers, (2) to attract professional manpower into local governments, (3) to produce new and needed skills, (4) to contribute to the information requirements for sound policy judgment at all levels of government, and (5) to provide opportunities to secure systematic knowledge of the administrative requirements and processes involved in implementing and managing governmental programs aimed at improving the quality of urban life. The Committee urges HUD to view these five objectives (or anticipated end-products) as major operational criteria for evaluating both the experiment as it progresses and its ultimate success or failure.

The Department of Housing and Urban Development has established six MDC's during the current fiscal year as a means of testing the willingness and ability of local governments to develop urban research and development capabilities. The Committee does not believe that six such centers will provide an adequate experimental base for making a reliable judgment on the probable operational success of the MDC as an instrument for performing R&D tasks on the local level. The number is too small, and the possible functions of MDC's have not yet been adequately explored. The Committee recommends, therefore, that HUD, while conducting a constant review of the initial six pilot efforts, increase the number of MDC's each successive year over the next three years in order to provide an experimental base sufficient to determine whether they should be made operational on a national scale. An experimental base of between twenty to thirty centers would be sufficient to provide the information and experience required for such a decision.

Even the first set of experimental MDC's may be handicapped by shortages of competent professional and supporting manpower. A rapidly growing program of this character is likely to encounter obstacles in manpower deficiencies as the number of MDC's grows. Consequently, the Committee recommends that HUD move without delay to help expand the supplies of required manpower by securing authorization, should it be necessary, to mount programs for the acquisition and upgrading of relevant professional and related skills at the local level. A special effort on the manpower front of this sort would obviously make the development of research capabilities more attractive to local governments and feasible for them.

Since the first six MDC's represent, in effect, a feasibility effort, the Committee recommends the following guidelines for determining their locations. The cities should have.

1. A mayor and city council capable of developing and supporting coherent action programs, carrying them through to completion, and willing to subject them to objective assessments. The necessity of testing the impact of such programs demands that the requirements for their evaluation be made part of their design and implementation.
2. A competent municipal administration with considerable technical resources and good working relationships with state and federal agencies.
3. Reasonably well developed research and development resources, based in local educational institutions, scientific institutes, or private consulting firms.
4. Opportunities for involving, in the formulation and carrying out of local programs, major sectors of the community that could play a role in their implementation–such as the construction industry, corporate management, financial institutions, labor organizations, the communications media, scientific and academic institutions, civic organizations and the churches–as well as the people whom the programs are intended to benefit.

The principal aim of the MDC program is to link an R&D capability to a competent municipal administration. Full consideration must, therefore, be given to the means by which the work of an MDC is closely geared to municipal decision-making processes. It is also critical for the MDC's to demonstrate by their operations the worth of research to municipal governments. The Committee is not certain which organizational forms and funding mechanisms are most likely to achieve these objectives. The Committee recommends, therefore, that several be tried in the experimental MDC program. Rigorous evaluation should indicate which are likely to produce MDC's that meet the five criteria of performance already set forth.

Direct grants to municipal governments could be one funding pattern, enabling them to enlist needed research capabilities, including direct employment of social scientists and other researchers in various municipal departments and professional consultants in the planning, implementation, and evaluation of HUD programs at the local level. Direct grants could also be made to local academic institutions, with the requirement that they work closely with municipal governments in the planning and administration of HUD programs. A funding strategy designed to establish conditions that shape mutual interdependence between researchers and decision-makers could also be adopted. Its primary aim would be to make social and behavioral science research more responsive to policy and program requirements at the local level. Viewed as mechanisms for collecting relevant information in a systematic way, and for monitoring and feeding back the results of research to decision-makers, the MDC's could serve as instruments for translating research results into forms usable in reaching sound policy judgments and formulating action programs at the local level.

Trying several funding approaches should make it possible to determine which are most likely to shape more effective processes than now exist for directing governmental programs to the heart of the urban problems they are designed to solve, and for strengthening the research and development capabilities in municipal government. The target is to establish the conditions under which municipal or regional governments can use research to clarify and guide their actions and, thus, to encourage them to develop local political and financial support for continuing interaction between research and program activities.

The Committee recommends that HUD consciously foster diversity among the experimental MDC's with respect to form and location, while striving for commonality of purpose and function. Some of the twenty to thirty experimental MDC's might be created by increasing existing urban research centers and associating them more closely with local decision-making. Others might be founded by providing social science research capabilities for metropolitan planning boards. Some should be located in large metropolitan areas and others in small cities. Some should be located where there are "model cities" programs, and others elsewhere.

In keeping with the idea of diversity, four possible organizational settings are suggested for the MDC's: (1) within the municipal government; (2) as part of local, metropolitan, or regional planning boards; (3) as part of a university; and (4) as an independent organization under appropriate community control. Whatever the organizational setting, the MDC should be linked with the policy-making function of the municipal government.

All MDC's should aim to make their research activities as broad and inclusive as possible, within the constraints imposed by their resources. Wide areas of overlap in research would help build a record of shared experiences and would develop comparable data on problems in a form usable by other cities, universities, urban institutes, and federal departments and agencies concerned with urban affairs. At the same time, each MDC should seek to take advantage of unique research opportunities on such problems as transportation, intergovernmental relations, the involvement of the private sector in city rebuilding, or the strengthening of local leadership. The decision to concentrate on a particular problem area would, presumably, be influenced by its urgency and the resources available, as well as by highly specific research conditions.

The size of an MDC will be, at least in part, a function of the size of the city in which it is located, and decisions on this score would have to take into account both the more complex problems of the larger urban area and the greater scale of the institutions likely to be found in it. However, some range in size should be purposely provided for, especially in the case of MDC's that are founded *de novo*, so that the question of critical mass and the problem of attracting and holding a qualified staff can be explored practically. This means, in turn, that the annual operating budgets of the experimental MDC's will also show a significant range, depending on the size of their professional staff, the time scale of their research activities, and other factors.

Diversity in form, location, and operation should not, as has been noted, be at the expense of certain common purposes and functions. All MDC's should serve to (1) strengthen municipal capabilities for policy-making; (2) provide for the transferability of research and development findings (perhaps aided by such institutional arrangements as the assignment of competent liaison officers and periodic meetings of the heads of all MDC's to assure useful interchanges); and (3) develop standardized reporting procedures, thus contributing to the growth of comparable data in support of HUD information needs.

The MDC's should follow the principle of setting their own programs and priorities within the general framework already outlined. This would permit—in fact, require—each MDC, first, to explore the ways in which the needs and attitudes of urban residents can effectively influence the formation of municipal policy and national goals and programs, and second, to explore the methods of bringing the resources of the private sector—financial, managerial, and technical—into productive relationships with the communities of disadvantaged residents of urban areas.

The relationship between HUD and the MDC's is a critical matter. The latter must be viewed both as potential sources for innovative proposals rooted in local understanding of existent and emergent local needs and as potential instruments for critical evaluation, and even challege, of national practices and policies, including those of HUD. Therefore, the Committee recommends that the initial grants to MDC's should be based on a general statement of goals, and that HUD should not require a detailed statement of work to be performed as a condition of the award of a grant. Rigid prior prescriptions of their activities might frustrate the realization of the innovative contributions that the MDC's should make to a national urban R&D effort.

It follows from this that HUD's control should be exercised in the form of a review of the work performed at the end of each year, which would indicate adjustments to be made the following year to strengthen programs or to provide comparability of work from one MDC to another. The performance of each MDC would be evaluated on the basis of criteria derived from the stated functions of MDC's already proposed.[22] (If the evaluation of MDC performance is conducted by extramural organizations under contract, HUD has an obligation to assign the task to highly competent research organizations, and to have the inhouse capability to assess the independence and objectivity of their work.)

Sufficient control must be exercised by HUD over the activities of the MDC's to assure a reasonable body of comparable data for use by local and national research bodies. The nature and form of these data should be identified through collaboration between the MDC's and HUD as work programs are developed. Frequent consultation among the MDC's will help achieve standards for comparability without inviting stultifying restrictions.

One important caveat is in order. The experimental phase of the MDC program should not be undertaken with the expectation that striking successes will be realized in each case. It should be viewed as representing a new and critical opportunity for learning how R&D capabilities can best be developed on the local level. The goal of immediate success should be subordinated to the long-range interest of learning how local resources may be strengthened and coordinated to apply the results of research and development at the local level, and to provide new sources of information for policy and program decisions at all levels of government.

Because HUD is already launched on the MDC experiment, the Committee has given considerable space and detailed attention to it. However, it recommends that HUD examine the means by which similar research capabilities can be provided to the states. About twenty states now have Departments of Community Affairs, or their equivalent. Impressionistic evidence suggests that most states are more deficient in their resources for research, and in the use of research findings, than are a number of large cities. If a strong effort is made to develop a national network of R&D capabilities, manpower resources and institutional arrangements at the state level must not be ignored.

RESEARCH AND DEVELOPMENT CAPABILITIES IN THE PRIVATE SECTOR

In developing a network of extramural capabilities, HUD should also turn to at least three potential resources for R&D performance within the nonaca-

[22] See p. 55.

demic private sector: industrial organizations, private profit and nonprofit research organizations, and consulting firms.

Industrial organizations with research and development capabilities will invest heavily in the development of urban-related products and services when they are convinced that the potential market is large enough to justify an investment. However, in the absence of a market, actual or potential, it is not now clear what effective incentives HUD could provide to enlist industry in an R&D partnership. Consequently, the Committee recommends that HUD conduct a systematic analysis of the kinds of industries that are suited to the kinds of partnerships with federal, state, and local governments that could provide the R&D efforts desired.

A wide range of private research organizations, both profit and nonprofit, are staffed to engage in social and behavioral research, and a significant number do conduct such research. Some have excellent reputations, but how many of them that have demonstrated high competence on other problems would be effective performers of social and behavioral urban research is not known to the Committee. These resources should not be either taken for granted or overlooked. The Committee, therefore, recommends that HUD systematically survey existing private profit and nonprofit research and/or development organizations to assess their capabilities, and that it also set standards of expected R&D performance related to HUD's needs. What has been said about private research organizations holds in good measure for the large array of consulting firms in the country with respect to HUD's extramural research requirements.

The Committee recognizes that a variety of activities exist in the private sector which are related to HUD's concern with the urban environment. Among them are the development of new building technologies, the planning and implementation of new community developments, and work-training programs. These activities should be viewed by HUD as an opportunity to enable social and behavioral scientists to participate and to acquire the knowledge, insights, and skills essential for identifying and resolving recalcitrant problems that impede the use of new techniques and the implementation of programs aimed at improving the quality of urban life.

INTRAMURAL RESEARCH AND DEVELOPMENT

To harness and guide the actual and potential resources of science and technology, so that they can be effectively used to help solve the nation's urban problems, is an extraordinarily challenging undertaking. To minimize its difficulty and complexity would be folly. It would not only do injustice to HUD, but would also misrepresent the nature of the endemic diseases from which the cities suffer, and the urgency of realizing the goal of improving urban conditions.

The Department must undertake the task of utilizing effectively existing extramural R&D capabilities that vary in organizational form, primacy of purpose, and competence. It has the task of helping to bring into being and to nurture new institutional capabilities that are experimental ventures, such as the UI's and MDC's. It has to mount, manage, and monitor rapidly expanding programs of extramural R&D, to maintain balance among them, and to be acutely sensitive to changing priorities. It must play a decisive role in the translation and transfer of the products of research and development into policies, programs, and operations. It must do this not only for its own departmental needs, but also for a variety of organizations and institutions in the public and private sectors having urban interests and responsibilities. Finally, HUD has leadership and coordinating responsibilities and functions for research and development within the federal government.

Merely to list these tasks is to underscore the critical importance of HUD's internal R&D staff capability. If it is deficient in quality and in the range of *disciplinary competences represented, or if it is* inadequate in size, the entire thrust of the Department's R&D efforts will be blunted. This prospect should not be viewed with complacency, as brief comment on its reality will make clear.

The Committee understands the reasons that led HUD, with its present small inhouse R&D staff, to adopt a short-run policy discouraging the submission of unsolicited research proposals. Obviously, the full utilization of actual and potential extramural R&D capabilities requires a reversal of this policy as soon as possible. The Department must be staffed so that unsolicited proposals provide one of several mechanisms for establishing interactions with a variety of research communities, academic and nonacademic, and for drawing on extramural capabilities to meet policy-oriented research needs, and so that it can capitalize on the theoretical and methodological contributions that may emerge from the work of scientists who are not presently thought of as being engaged in research related to the Department's concerns.

Inadequate inhouse R&D capabilities will impede HUD from initiating a full range of *ad hoc* contracts to improve management of resources, to assess impacts of programs, to experiment with changes in administrative procedures, and to study special situations and needs as they arise in the nation's cities. True, some of those needs will be met through the urban institutes and through MDC's, as these new institutional capabilities become operational. But others will require *ad hoc* contracting that will provide useful products only if competence exists within the Department to specify performance standards and to monitor the work done under contract.

Lacking a highly able inhouse staff with diversified skills and experience, HUD would be deprived of the flexibility and resourcefulness needed to hasten the growth of extramural R&D capabilities and to shape them into a responsive network. Moreover, it could encounter obstacles to winning that recognition of professional competence essential for creative collaboration between the Department and the performers of research and development.

In making these observations, the Committee may appear to be offering gratuitous counsel. It is aware that the Department shares its views on the importance of a strong intramural R&D capability that is multidisciplinary in composition. Its personnel, drawn from outside as well as from within the social and behavioral sciences, should include sociologists, political scientists, economists, anthropologists, urban geographers, demographers, survey and computer experts, and lawyers, as well as engineers and business and public administrators.

How large an R&D staff HUD will require in the future cannot be indicated with precision, for its growth in size will depend on the funds available for extramural R&D, the pace of development of extramural capabilities, and the Department's requirements for policy analysis and program evaluation. On the basis of the research, capabilities, manpower, and related recommendations made in this report, it is reasonable to estimate that the Department's inhouse capability should build up over the next five years to number between 75 and 100 professionals. This may well be a conservative estimate.[23]

Size represents one problem; quality is a second and more difficult one, and special attention will have to be given by HUD to identifying and recruiting individuals with the kinds of competence that the Committee has sketched. The Department will have to be in a position to offer salaries that able and experienced individuals in the academic and industrial worlds will find attractive. This means that a relatively large proportion of higher grades will have to be made available for recruitment purposes, including, it is likely, a disproportionately large share of "supergrades." It also means that HUD will want to make certain that it will provide for its R&D staff a working environment that will attract professional personnel, including opportunities for professional growth.

If they are given sufficiently high priority by the Department, HUD's

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[23] A rough quantitative rule of thumb commonly used to estimate the size of R&D staff is one professional to every $1 to $3 million obligated for R&D. By this rule, a staff of 75 professionals could presumably handle a total R&D budget of between $75 and $225 million; and a staff of 100, a budget ranging from $100 to $300 million. The Committee on Urban Technology proposes doubling the budget from its present base of $10 million every year over the next five years. This would produce a budget of $320 million in the fifth year, an amount requiring more than 100 professionals by the rule of thumb cited. All qualitative considerations are, of course, ignored in these crude calculations.

R&D staff needs can be met. It should be anticipated that the development of outside research and development capabilities will help provide manpower resources not presently available, and that HUD will establish programs to encourage and facilitate the mobility of research specialists among the UI's, MDC's, universities, industry, and the Department's inhouse staff.

Fellowship programs should serve to attract university researchers for short periods of service with HUD. The Department should expect to lose personnel to the universities, just as it should expect to attract personnel from that source, and it should take a positive attitude toward such turnover, because close contact with the universities is essential to its research requirements. Similarly, over the longer run, as other extramural capabilities develop, HUD will be able to facilitate the interchange of research and other professional personnel among government, industry, and the universities. Once HUD enjoys a strong inhouse staff capable of assuring competent guidance for postdoctoral researchers, it could exploit the possibilities of a postdoctoral internship program.

The Committee believes that one note of warning is in order with respect to the utilization of an intramural R&D capability. A concentration of scientific and professional skills may constitute a temptation to use staff for writing speeches, budget presentations, committee presentations, and the like. Obviously, the inhouse R&D capability should not be isolated from the rest of the work and the operations of the agency. Quite the contrary, it should be integral to the Department's missions. But HUD's top administrators will want to recognize that a certain degree of independence from immediate day-to-day administrative and political requirements is essential if the R&D staff is to be effective in carrying out its own missions.

INDEPENDENT ADVISORY SERVICES

No matter how strong an inhouse R&D capability HUD ultimately builds, the Department will still want to complement it with advisory services of an independent character provided by first-rate individuals from outside the agency. The availability of such advisory mechanisms would be of special importance in a period of hoped-for rapid expansion of the Department's R&D programs. Whether HUD's most sanguine R&D budget hopes are realized or severely frustrated, HUD will be in a better position, with respect to the setting of priorities and to allocating resources for R&D purposes, if it can secure informed and tough-minded advice from external sources on both an *ad hoc* and a continuing basis.

The Department will certainly want to continue to use consultants on technical problems and policy issues to complement its internal staff resources. It should want to examine and experiment with some equivalents to the variety of advisory committees, boards, and panels relied upon by other departments and agencies. At this juncture—when HUD's R&D efforts are undergoing transition, and when the Department as a whole is subject to powerful dynamic forces—it would be advisable to move on the creation of advisory mechanisms, so as to give the Department maximum flexibility in the future. Consequently, the Department should examine with care such familiar independent advisory instruments as the Space Science Board (NASA), the Defense Science Board (DOD), and the National Advisory Health Council (HEW), to determine whether they constitute appropriate models. The Committee is uncertain about the best form through which to secure advice of an independent, competent, and continuing character on many aspects of HUD's research and development program, but it recognizes this to be a genuine need. Either a single advisory mechanism or a group of mechanisms composed on the basis of the substance of HUD's R&D programs, capable of generating new ideas and providing independent assessments of HUD's ongoing research and development activities, would help the Department significantly.

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Guidelines for Developing Urban Information Systems

Rational action depends, in part, on the availability of reliable information and the skills brought to bear in its analysis and use. This era, which has been characterized in so many different ways, has also been labeled the age of information, and much has been said about the "information explosion" and the wonders of computer technology for information storage, retrieval, and processing.[24] Contemporary attitudes toward intended social change and techniques for effecting it make the role of information increasingly important, both in planning for action decisions and in implementing them.

Information and its use constitute a critical dimension of the recognition that the potentialities for error attend all purposeful social actions, and that through feedback of information the nature of needed corrective measures can be indicated. Feedback implies elaborate sensing mechanisms in the environment to detect and report the consequences of action rapidly enough to make corrective action possible. The computer now makes it possible not only to store, process, and retrieve vastly more information than in the past, but also to conduct computational procedures and simulations of complex processes in ways that are qualitatively different. It is now feasible to think of designing an overall societal information system with accompanying sets of subsystems.[25]

The Department of Housing and Urban Development is in a position to assume the key role in the development of urban information systems, and thus to contribute to the creation of a national urban information system. Therefore, to the extent now possible, its activities in the information field should be based on an overall model of what a complete information system, meeting national urban needs, would be like.

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[24] For an overall view of information problems in the social and behavioral sciences, see *Communication Systems and Resources in the Behavioral Sciences.* A report by the Committee on Information in the Behavioral Sciences, Division of Behavioral Sciences. National Academy of Sciences Publication 1575 (Washington, D.C.: National Academy of Sciences, 1967).

[25] See Raymond A. Bauer, "Societal Feedback." *The Annals of the American Academy of Political and Social Science,* Sept. 1967.

DATA, INFORMATION, AND MEASUREMENT

A powerful tool of the national effort for urban reform and reconstruction would be the capacity for the systematic collection, storage, processing, and selective dissemination of data relevant to the state and functioning of urban areas. The commonly used term "urban information system" usually refers to some such facility associated with a specific urban area and designed to assist in the operation of the relevant urban complex. The development of the national analogue to such a system will require R&D investments by HUD. These would be readily justified by the contribution such a national system would make to the national urban effort, to the guidance of HUD's mission, and to improving the functioning of individual urban units.

The development of urban information systems, whether local or national, requires an adequate taxonomy of uses, types of data and information, and users. Here it will be sufficient to suggest the following way of classifying the uses of urban information systems: (1) operations and control; (2) routine administration; (3) management review and action; (4) planning; and (5) research. On the level of the local urban unit, these uses may be characterized as follows:

1. *Operations and Control* This refers to specific, detailed, almost instantaneous information required for such activities as dispatching of police and fire equipment or of ambulances, or, with less urgency, the collection of trash and garbage and the delivery of other services. In addition to being adequate for the conduct of operations, records should be kept of such information for purposes of review of the adequacy of operations and for research on the functioning of the urban apparatus.
2. *Routine Administration* This refers to collection and processing of information on such routine matters as city payrolls and the registering of deeds.
3. *Management Review and Action* This is a parallel to a management information system in business. The time lag of the data will be somewhat longer than that encompassed in the two foregoing categories. Data will ordinarily be aggregated, whereas in the previous two types of systems it is most useful only if disaggregated. The purpose will be to afford the city administration information for evaluating the functioning of the urban apparatus, the degree

of success and failure of programs, and so on. It will provide the basis of management action to correct and improve the way in which the city operates, rather than the basis of day-to-day operations.

4. *Planning* Planners require data and projections on future needs and resources. They also require a knowledge of the functioning of the institutions of the city. If the required data were at hand they could, ideally, utilize simulation models of the city to assess the probable impact of the range of programs from which they must select.

5. *Research* Research information supplies the basis for evaluating and understanding the consequences of past action, for designing future actions, for analyzing the reasons for successes and failures, for expanding knowledge of urban processes, and for eventually modeling the urban system. From research comes the more fundamental understanding of the functions and working of the city, on the basis of which managers devise corrective action and planners devise new programs.

Equivalent information on the regional, state, and national levels must serve the needs of diverse users, including (1) HUD, both as a monitor of its own activities and as the major agency responsible for the condition of the cities; (2) the Congress; (3) other departments and agencies of the federal government; (4) the general public; (5) activist groups in the public; (6) those responsible for local urban operations; (7) local management and political personnel; (8) researchers on the local, regional, state, and national levels in government, business, and the universities; and (9) journalists.

An institutionalized mechanism, national in scope and organization, for identifying, gathering, storing, processing, digesting, and disseminating data, information, and knowledge about the cities and their people is the future goal to be pursued. In its pursuit, HUD can contribute by helping (1) to identify the constituencies for the use of such information more sharply than has been done up to now, and to understand and evaluate their information requirements, patterns of information use, and the state of the art of information systems; (2) to stimulate, coordinate, and fund the development of local information systems; and (3) to develop and manage a national urban information system in ways that assure the use of information for planning, program design, and evaluation, for the management of its own affairs, and for research. To do this, HUD must develop and maintain a strong inhouse capability not only on the computer side, where the strength of information systems work has usually rested, but also for social measurement, social systems analysis, public administration on the urban level, the handling of document archives, and information dissemination.

A better understanding of the requirements of a rational, national urban information system will depend on an adequate taxonomy of uses, users, and types of data and systems. For this, studies will be required on the actual use, habits, and information requirements of the key actors on the urban scene, as well as detailed operations analyses of urban administration and program administration.

At this point, it is not altogether clear which data belong in urban information systems or how they are likely to be used. The Committee recommends that HUD's initial efforts be directed toward the more promising steps to be taken in the immediate future, and, therefore, that the continuing task of defining information needs be undertaken immediately.

MEASURES OF CHANGE

There is now broad agreement among social and behavioral scientists that more appropriate ways of measuring social change are needed than now exist. Customary measures for program evaluation, for determining social change, and for revealing the state of the cities (e.g., number and state of housing units, delivery of services, income, level of education, etc.), are primitive, where they exist at all. The consequences of programs should be measured in terms of changes they produce in the values, experiences, and behavior of the people affected by them. Thus, if improved medical services are provided, it is essential to know if they actually result in improved health, and whether better health, in turn, results in other improvements in school experience, work performance, and in the quality of family life. Relatively little has been done to establish measures for changes in what is called the "quality of life"—changes that are the end products of complex sequences of events affected by a program—and what the appropriate values are by which such effects are to be judged is a matter of dispute.

Moreover, measurements should not be confined solely to observing the primary effects intended by a program. A program ought to be valued in terms of its impacts, negative or positive, of an unintended and secondary or tertiary character. This demands an urban system model or some consensus on those parameters that should be subject to continuing measurement. There are some continuing data series, but they are few in number. More important, the knowledge of causal relations is insufficient to link programs to the full range of their effects, almost all of which are multidetermined.

Out of necessity, HUD's immediate efforts at program evaluation must remain anchored chiefly in traditional criteria, such as the delivery of facilities and services and assessments of the quality of execution of those programs. The development of more direct measures of the effects actually desired, the determination of the full range of unintended effects to be assessed, and the appearance of deferred effects (e.g., high rates of stable employment, employment in better jobs for the generation benefiting from enriched educational programs, and improved community health as a result of better housing) lie in the future. Over the shorter run, programs will have to be evaluated on the basis of (1) how well they are executed; (2) the number and quality of goods and services produced; and (3) whatever measures of effect can be observed, no matter how inadequate they may be.

While HUD has to accept these short-run limitations on the ability to understand the state of affairs of the cities in terms of the direct impact of events on the values and experiences of the people involved, it should associate itself with efforts to develop more appropriate measures. The concern with new measures of social change and with social-psychological criteria of evaluation is widespread and is perhaps best exemplified in the work of the Social Indicators Panel of the Department of Health, Education, and Welfare, and in the work of the Russell Sage Foundation on new measures of social change. In its most extended form, this concern for social measurements extends to a system of social accounting.[26] If a system of social accounting were in being, the basis for measuring the effects of programs affecting important parameters would be present.

The Department should approach this promising area experimentally and with some caution. It has already expressed interest in social-psychological measures of program effects in its proposal for evaluating the status of the people involved in Model Cities programs. It should finance and stimulate—alone or in conjunction with other agencies, such as NIH and NIMH, for example—experimental attempts at urban social-psychological measures, preferably in the same local areas in which it is involved in the development of urban information systems. In this way, HUD could also contribute to a better understanding of urban processes.[27]

In order to secure social-psychological measures for what has been called, without specific definition, the "quality of life," experimentation with new measures has to be conducted. Such experimentation should seek to identify sets of interacting variables that may be treated, at least provisionally, as subsystems of the urban process. If this were done, it might be possible to move toward establishing measures of the indirect, second-order effects of a given program.

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[26] *Cf.* Bertrann Gross's discussion in Raymond A. Bauer (ed.), *Social Indicators* (Cambridge: M.I.T. Press, 1966).

[27] See pp. 27–35 for a discussion of the importance of research on social processes.

LOCAL URBAN INFORMATION SYSTEMS

The concept of an "urban information system" operating on the local level is one of the most ubiquitous in current use. It may also be the prime candidate for the most oversold idea in the field of urban studies. It envisages, in its more ambitious forms, a "comprehensive urban information system" covering a metropolitan area, with a vast data base that could be aggregated and disaggregated with great flexibility and retrieved with great speed. It would be equipped with simulation models of the urban system and of subsystems with which the planner or administrator could anticipate the probable range of consequences of the actions he is contemplating. Such a system would serve all the functions previously enumerated–operations and control, administration, management review and action, planning, and research.

This vision of a "comprehensive information system" is most attractive at first glance. But it is far from realization, and may actually be inappropriate for accomplishing its intentions. There is substantial reason to believe that the notion of a single "comprehensive system" serving all of the above needs for a given metropolitan area is a misconception. Experience with information systems in other areas–health, for example–suggests that separate systems designed to serve individual types of needs may be much less expensive and easier to construct. Existing "comprehensive systems" are pale shadows compared with what they promise, and some of the more successful have done little more than transfer administrative record-keeping and processing activities from automatic data processing to electronic data processing equipment.

Many questions remain to be answered, and practical difficulties must be overcome before the realization of a single "comprehensive system" is within sight. The advantages and disadvantages of various computer hardwares have to be determined. The risks of creating a system that will become outmoded have to be minimized. Questions of violation of privacy have to be resolved. The extent to which systems should be general, rather than organized around the specifiable needs of a limited group of decision-makers, is far from settled. And there are still other questions to which answers are currently lacking.

DEVELOPING URBAN INFORMATION SYSTEMS

To recognize the deficiences that mark the current state of urban information systems is not to dispute their potential values. To hasten their development, the Committee recommends that HUD:

1. Strengthen its inhouse capability for assessing the "state of the art." This is essential for understanding the present and future value of employing local urban information systems in association with the Department's various functions, and for awarding contracts and monitoring those aspects of the development of local urban information systems relevant to its mission. This inhouse competence should embrace data production and use in different forms, service capabilities, social measurement, and understanding of social, economic, and political processes, as well as of computer hardware.

2. Refrain from investing a sizable portion of its resources in the widespread development of ambitious urban information systems until there is a better understanding of how such systems can best be introduced and constructed. At present, HUD would be ill-advised to commit a large fraction of its scarce resources to a crash program on this front.

3. Associate itself with several major attempts to develop, test, and evaluate specific information systems. These should be selected on two bases: their capacity to support broad programs of activity, so that the learning accomplished in any one urban area is as substantial as possible; and their diversity, so that the learning experience can lend itself to as much generalization as possible.

In the development of urban information systems, HUD can play a dual role. By providing supplemental financing and technical advice, it can stimulate and encourage experimentation and gathering of experience in the development of information systems on the local level; and by disseminating what is gleaned from the results of experimentation and from experience, it can facilitate the building of information systems on as sound a basis as possible.

A prudent investment of HUD funds in these developmental activities would consist in providing support for experimentation on the relative merits of alternative procedures. For example, conflicting claims are often made for competing computer programs. The net merits of the competing programs can only be assessed if real problems are worked out with each, and the speed, cost, and adequacy of the results are compared. Experimentation is also essential to investigate and appraise different procedures for managing the confidentiality of data, judged in terms of completeness of protection of privacy of the individual as a trade-off against the usefulness and cost of the system. Experimentation is required to determine ways of assuring comparability of data, standardization of basic formats, and compatibility of programs, so that data from more than one system in a given locale and data from similar systems in different urban areas can be related to each other.

Past experience suggests that urban information systems are best built from the ground up, starting with existing needs, systems, and activities. A single "comprehensive system" should be viewed as outcome rather than as starting point. From this perspective, the handling of administrative records and operations appear to be important components, for they are two activities likely to secure early support and to experience early success. There is good reason, therefore, to begin with administrative and operations and control systems, developing them as individual systems, and then phasing in management, planning, and research information systems–probably in that order.

Information systems for planning promise, in principle, to be extremely valuable, but they are probably furthest from realization. While the art of technological forecasting has been partially developed, that of social forecasting–except in the critical area of demographic projections–is still rudimentary, and very little has been done in the simulation of urban social systems, or even of subsystems. Improved social forecasting depends upon a far greater understanding than is now available of the structures and processes of the systems in which intervention is intended. Special attention should be be given to investing in the development of information systems for planning, if the needs of planners for anticipating the future consequences of alternative actions are to be met. This is required if the strategy of development of local systems is to proceed generally with those use-systems that have the clearest, quickest payoff and that will get most support.

The Committee recommends that HUD, in its experimental approach to the establishment of Municipal Development Centers, should give special emphasis to the ability of the centers to develop more adequate local information.

Some city governments in the trial MDC areas may attempt to build ambitious information systems. The Department should have cognizance of such efforts and should make technical advice available when requested. Beyond this, however, HUD should stimulate relatively modest, useful efforts at data gathering, storage, processing, retrieval, and so on. The goal should be (1) to provide data of immediate usefulness, (2) to stimulate learning in data gathering and usage on the local level, and (3) to provide the foundation for more ambitious information systems as our general capacity for building such systems matures.

AN URBAN DEVELOPMENT LIBRARY AND DATA AND DOCUMENT CENTER

In the coming decade, what is learned about cities is likely to be at least as important as what can be done for them and their inhabitants. With its central responsibility for attacking the problems of the cities, HUD should speed the learning process in the several ways already suggested. However, it should also make generally available the fruits of this learning and the raw materials from which others can benefit.

This points to the creation of a central library and data and document center, or a decentralized system of such centers, with central planning and coordination. The center envisaged would include a library such as the Army Medical Library, a resource for storage and retrieval of documents, and a set of data banks that could be drawn on by qualified researchers. The Department of Housing and Urban Development should seek the best advice on how to go about setting up such a center in an orderly fashion, and its initial steps in this direction are encouraging.

OFFICE OF INFORMATION MANAGEMENT

In view of HUD's tasks in the area of information,[28] the Committee recommends that the kinds of data, information, and measurement activities that have been discussed in this section of the report be organized under an Office of Information Management.

In the past, the major gross defects of deliberately designed information systems have arisen from their being constructed according to a rationally conceived design that, in effect, ignored (in greater or lesser degree) the needs, activities, and habits of users. It has been urged that HUD be vitally concerned to ensure that a national urban information system is relevant to the uses to which it is put and, furthermore, to disseminate and promote actively the use of the system. This will require HUD to undertake a task of education in the use of the information generated.

Information is used for many purposes other than those for which it is ostensibly gathered. This is particularly true with program evaluation information, which is often used as a political weapon against the agency responsible for the program. The Committee does not have the competence to indicate just how education in the use of information is to be conducted, but it does recognize that HUD, if it assumes responsibility for helping to create urban information systems, will also be fashioning the tool whereby it will itself be evaluated. Consequently, it must be concerned that both the systems and their data are employed with respect for their limitations as well as their capabilities.

[28] The major tasks identified by the Committee are (1) to define the information needs of the national urban development "system," i.e., that complex of people and institutions that will determine the fate of the cities; (2) to contribute to constructing that system through its own efforts and by stimulating and supporting the efforts of other agencies and institutions; and (3) to manage the development and ultimately the operation of a national urban information system.

VALUE OF URBAN INFORMATION

On the operating level in the cities, in the federal government, and in other quarters, today's appetite for large amounts of detailed information about specific cities, and cities in general, is enormous and growing. It is greater than the capacity to analyze the information meaningfully, and if it is fed with the new types of measures recommended in this report and elsewhere, the cost of gathering the full range of proposed data may become oppressive.

Several factors contribute to making the envisioned gathering of urban data very expensive. The only major cost-saving to the local unit derives from the U.S. Census, which, because it attempts to enumerate every person in every dwelling unit and every one of certain types of institutions, automatically gives the cities detailed information on the topics covered by the census. However, for many planning and operating purposes the decennial census, or even a five-year census (if it were realized) becomes outdated. In rapidly changing areas of cities—and these are likely to be of crucial interest—census data can become inadequate or misleading within a few years. Hence, individual cities may have to develop means for updating the federal census on a one- or two-year basis. Various updating mechanisms are already available in many cities, such as school censuses and police censuses. At present, each of these has limitations as a complete device for updating the federal census, and solving the updating problem will be costly.

Many measures are made on a national basis through sample surveys, as in the case of employment and health. Such surveys are made on so small a sample base that their results are not usable for individual cities. Since the validity of sample surveys depends on the relative size of the sample, it follows that making such measures on a local basis would be as expensive as conducting them nationally.

To learn as much about an individual city, on an updated basis, as about the nation might cost almost as much as the current national statistical budget,[29] without even considering new measures, such as the social-psychological measures of change discussed earlier. It might appear ridiculous to consider a data-gathering budget of these dimensions for even the largest of our cities. However, at this time it is not known whether the information derived from such efforts might not be worth the cost, particularly if subjected to appropriate analyses. At what point does the cost of gathering information exceed its value? At present, this question cannot be satisfactorily answered.

The value of information lies in its ability to improve the quality of decisions and actions. The basic canon is that no more should be spent on gathering information than is likely to be saved by effecting improvements in the decisions made and actions taken. At present, there are statistical decision theorists who have formal procedures for assessing the value of information, but the Committee is not aware that attempts have been made to apply these models to problems as vast as those outlined above.[30] However, if there are to be rational bases for deciding on proper levels of spending for urban information, work should begin rapidly at least on conceptualizing this problem. The cost of the analytic work required should be low, and provision for it should be made in HUD's R&D program. Subsequent work might involve field research and experimentation and, therefore, greater costs, and it will be wise to have the prior conceptual work done as soon as possible.

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[29] Total obligations for the statistical programs of the federal government are reported to total $122.7 million for 1967. See Raymond T. Bowman, "Crossroads for Future Development of the Statistical System." *Statistical Reporter*, Feb. 1968.

URBAN INTELLIGENCE SYSTEMS

In discussions of urban information systems, little or no systematic consideration is given to less formal means for finding out what goes on in the cities that is relevant for their governance. It is appropriate, therefore, to comment on what may be called "intelligence systems."[31]

To some extent, an intelligence system is that which any sensible urban administrator establishes on a commonsense basis in the absence of a formal information system. A formal information system does not obviate the need for an intelligence system. Consequently, deliberate attention should be given to those aspects of city life to which formal data series cannot be fitted, and to the means for systematic scanning of the urban environment for purposes of monitoring such features of the city. Albert D. Biderman has observed:

> Some intermediate forms of knowledge, which I call products of intelligence research or policy research, also differ from research directed toward engineering applications. They fall midway on a continuum along which you can think of the number of users to whom a piece of knowledge is directed, the number of its possible uses, and the number and variety of possible situations that it is useful for, and the variety of relevant values of things that are important that arise in these situations. The more general you get with respect to each of these considerations–the more users, the more different kinds of users, and the uses you are thinking of–the closer you approach knowledge that has enlightenment functions. The more you move down from that end of the continuum to where uses, users, values and situations are highly specific, is where I'd call an engineering form of knowledge. Through some mid-

[30] This statement applies specifically to assessment of the value of *information*.

[31] See, for example, Harold L. Wilensky, *Organizational Intelligence* (New York: Basic Books, Inc., 1967).

dle range, it is intelligence and policy knowledge. The forms of knowledge most applicable for use by professionals are those that fall toward the enlightenment end of these continua.[32]

It is worth noting that organizational theorists concerned with business organizations have recently turned their attention to understanding what is called "scanning" of the environment,[33] and there are implications in their work for the public sector.

There are several urban phenomena for which highly specific information is needed, and for which the data that would be part of a formal information system is not likely to be available for some time. Riots in the cities are a good example. "Hidden" employment, whether illicit or not, is another. The emergence of new constituencies, or communities of interest, generated by new issues or program developments is a third. The early identification of emergent coalitions that may alter old power structures or erode familiar loyalties could have great importance for decision-making and action.

As already indicated, the Committee knows that a certain amount of urban intelligence will be gathered on a commonsense basis by any alert urban administrator. However, it believes that HUD should devote a special effort to systematic investigation of the kinds of urban intelligence systems that would complement the growth of urban information systems.

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[32] Albert D. Biderman, "Planning for Emergency Operations–Anticipatory Plans." *2nd Emergency Operations Symposium Proceedings,* Systems Development Corporation, SP-3100, April 15, 1968, p. 261.

[33] *Cf.* Francis Joseph Aguilar, *Scanning the Business Environment* (New York: The Macmillan Company, 1967).

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Concluding Observations

USES OF THE SOCIAL AND BEHAVIORAL SCIENCES

The Committee is neither a designated nor a self-styled representative body of the scientific disciplines or the professional groups from which its membership is drawn, and it is, perhaps, unnecessary to say this. However, the Committee does want to state explicitly that the advice it offers to HUD in this report neither exhausts nor necessarily represents the full range of social and behavioral science competence that both the development of HUD's R&D program and the problems of the nation's cities deserve.

There is a long history of debate over the uses of the social and behavioral sciences in the formulation of public policy[34] and for effective governance. While much of the controversy about the relevance and utility of the various disciplines has been conducted among social scientists, this does not mean that the results of social and behavioral science inquiry did not influence social policies long before these sciences reached their present stages of development.

The contributions of economic theory and analysis to economic policy, the use of theories and techniques of psychological testing in the selection of manpower and in the assessment of performance, and the use of sample survey methods for collecting census and other vital data need not be detailed here. They rank among the more familiar examples of social and behavioral science contributions to the society's ability to manage and direct human affairs.

In the past few years, the relevance and the uses of the social and behavi-

[34] A recent publication dealing with this subject is Raymond A. Bauer and Kenneth J. Gergen (eds.), *The Study of Policy Formation* (New York: The Free Press, 1968).

oral sciences in solving pressing national problems have received increasing attention and have also been the themes of congressional inquiry and lively debate.[35] The instances in which all parts of the federal government have invoked these sciences for a better understanding of and ways of dealing with urgent societal problems are too numerous to list here. It is worth noting, however, that the National Science Foundation established early in 1968 a Special Commission on the Social Sciences, whose primary concern is with their utilization, and that Senator Walter F. Mondale has proposed a "full opportunity and social accounting act" that, in effect, would call on the social and behavioral sciences to provide social indicators and accounts[36] comparable to those developed for the economy.

Disciplinary traditions as well as acute concern with societal problems shaped the Committee's approach to its tasks. It early agreed that (1) the social and behavioral sciences, properly mobilized and applied, can contribute significantly to HUD's understanding of urban processes and its ability to manage them; and that (2) the social and behavioral sciences should not be viewed as simple tools for providing ready-made or quick solutions to urban problems.

It is evident that far less has been learned than should have been learned from past efforts to deal with national social crises. It is unfortunate, therefore, that problems of urban deterioration, dislocation, and disruption must be faced without the contributions to understanding that might have been gleaned from past experiences and properly designed research. The Committee recognized how difficult it is to withhold even a small fraction of available resources from measures that are alleged to be immediately ameliorative and are vigorously championed. Yet, if scientific and technological knowledge and inquiry are to serve the society well, they must be used to inhibit action on attractive but misconceived courses, as well as to create new options for action.

This report affirms the relevance and use of the social and behavioral sciences not only to HUD but, more important, to the cities of the nation. The

[35] For a statement of the history and current relationships between the federal government and the social and behavioral sciences, see *The Behavioral Sciences and the Federal Government*, a Report of the Advisory Committee on Government Programs in the Behavioral Sciences, Division of Behavioral Sciences, National Academy of Sciences-National Research Council, National Academy of Sciences Publication 1680, 1968. For a description of policy-relevant research see Rensis Likert, "A Statement Submitted to the Research and Technical Programs Subcommittee of the Committee on Government Operations, U.S. House of Representatives, in response to questions raised in an 'Inquiry on Federally-Sponsored Social Research,' December 2, 1966"; and Raymond A. Bauer, "Application of Behavioral Science." *Applied Science and Technological Process,* A Report to the Committee on Science and Astronautics, U.S. House of Representatives, by the National Academy of Sciences, 1967.

[36] For comments on social indicators and accounting, see Chapter 5.

R&D requirements recommended in this report represent a large investment, indeed, as does the buildup of capabilities, and it would be misleading to suggest that the resources are immediately available for the magnitude of the effort required.

In certain areas, there is the prospect of immediate results from a fuller use of the social sciences in the development and testing of social policy. This is notably in the sphere of assessing the effects of the vast array of social programs launched in recent years and the many more likely to be initiated in the near future. Systematic research, using already established methods and concepts of the social and behavioral sciences, can play a much larger role than it has in influencing the actions of administrators and legislators with respect to the support, abandonment, or modification of programs addressed to urban problems. The design of new programs to achieve specific goals for "improving the quality of urban life" is a more difficult enterprise, but here, too, the empirical findings, concepts, and methods and techniques of the sciences can be called upon for guidance.

The Committee's views on research and development and on the creation and use of a network of social and behavioral science research capabilities represent, if not the pursuit of a "systems" approach, at least a systematic approach to HUD's R&D needs. Consequently, the principal functions of what may be called an "R&D system" are defined in terms of the contribution of R&D activities to the policy and program needs of the Department, and, in turn, to a more effective performance of HUD's mission. The analytical procedures and substantive content of an R&D program directed to the realization of these functions have been specified in detail, and there is no need to recapitulate them here.

This is the place, however, to restate in capsule form what the Committee believes should be HUD's guiding principle: The establishment of R&D priorities should be consistent with the requirement that available and potential resources be mobilized through a coordinated development of HUD's total R&D program, which aims at keeping capabilities, manpower, and funding carefully in phase.

"SOLVING" URBAN PROBLEMS

The problems of the cities, however, will not succumb rapidly, whether to technological innovations, to new administrative arrangements, or to new social programs. One can hope to ameliorate many of the problems that today seem most pressing. Yet, the dynamic nature of modern society and technology, the steadily rising expectations of populations, and the complexity of social arrangements all conspire to assure the persistence of many old problems, even if in modified forms, and the emergence of new problems.

Because the Committee assumes that the problems of the cities will be of continuing concern, it believes it imperative that a better understanding of urban processes be gained as rapidly as possible, and that a significant investment be made to anticipate the future problems and opportunities of urban America. The buildup of social and behavioral science research capabilities that the Committee proposes should be regarded as a means both for dealing with present difficulties and for managing the nation's affairs more wisely in the future. While it is clear that social and behavioral science research can contribute significantly to HUD's policy and program needs, the development of the capabilities required to realize fully the potentialities of these sciences should not be expected in the short run.

Appendix A

Statement of Work and Committee Procedures

The tasks to which the Committee on Social and Behavioral Urban Research and the Committee on Urban Technology were asked to address themselves are set forth as follows in the "Statement of Work" in the contract entered into between the Department of Housing and Urban Development and the National Academy of Sciences:

A. The contractor shall advise the Department of Housing and Urban Development on certain important elements of its long-range R&D program, which is addressed to improving the Department's capability to deal with current and emerging needs of the Nation's cities and towns. Two parallel study efforts shall be established. Particular emphasis in one shall be placed on those social, economic, and institutional factors which affect the selection, introduction, and use of new techniques and programs to meet the social needs of the day and which underlie the emerging requirements and needs of tomorrow. Particular emphasis in the other shall be placed on developing new technologies and improved cost-reducing approaches by industry to meet social needs. Both study efforts shall consider the means of attracting and training the professional manpower required in these fields. The substantive efforts of this advisory activity shall be focused on five major tasks:

1. To identify the broad alternative and complementary strategies which are available for encouraging industry to develop and put into practice useful new technologies and cost-reducing approaches to the problems of housing and urban affairs.
2. To specify the kinds of major social, economic, political, and institutional questions that would have to be raised and answered in order to establish a reliable basis for long-range research and development plans and programs.

3. To delineate the kinds of research capabilities which HUD should either strengthen or, if lacking, seek to establish, so as to assure that its research dollars would be spent most effectively.

4. To assure that the behavioral and social science research capabilities of academic institutions are optimally organized and effectively utilized in HUD's long-range research and development activities.

5. To make recommendations not only to bring the many facets of urban problems into focus and define these problems more sharply, but also to mobilize and augment the capabilities now available for solving these problems, i.e., consider the applicability of a "total systems approach."

The first meeting of the Committee on Social and Behavioral Urban Research (COSBUR) was held on December 12, 1967, with the morning devoted to a joint session with the parallel Committee on Urban Technology (CUT). During this session the committees were briefed by HUD officials on the Department's need for advice on strategies for expanding and developing its research and development program. On the afternoon of December 12, COSBUR met separately and considered various substantive and procedural approaches to the "Work Statement" tasks. The Committee agreed that the first of the five tasks fell most appropriately within the competence of CUT. The initial discussion of approaches to the other four tasks included attempts to isolate major urban problems and their determinants, to consider various programs for attacking these problems, and to develop alternative classifications of research priorities.

The discussion led to the decision to begin the Committee's work with independent attempts to set forth strategic approaches to urban research. In line with this decision, working papers were subsequently prepared on policy-oriented research needs, a strategy for research and development in HUD, urban ethnography and sociometry, and social research and the problems of cities. These and other materials provided the basis for the Committee's second meeting on January 26, 1968.

During this meeting, the Committee identified several additional topics of of relevance to its assignment, which required drawing upon additional resources in order to be explored in sufficient depth. Accordingly, such additional resources were enlisted to deal with the following: (1) systems analysis and formal model building as devices for planning a strategy for urban research and development, (2) the specification of the kinds of legal research needed to reduce the obstacles to achieving program goals and to facilitate the implementation of new programs, and (3) the identification of the critical measures of the impact of federal programs on the people of the cities.

Working papers prepared by members of *ad hoc* subcommittees established on these subjects, together with other relevant materials, were considered by the subcommittees. Their discussions and recommendations are reflected in the body of the Committee's report. In addition to the materials prepared by Committee and subcommittee members, resource materials were identified and circulated by the staff of the Division to the members of the Committee. Materials from HUD were made available to the Committee by George W. Wright, who served as the Department's liaison with the two committees.

An executive committee composed of the chairmen and two members each from COSBUR and CUT met on March 13, 1968. It reviewed the activities of the two committees and agreed on a common outline for interim reports of the committees.

A preliminary draft of the Committee's Interim Report was circulated to members early in April and provided the basis for the meeting of the Committee on April 15 and 16, 1968. The discussions during this two-day meeting, as well as the individual comments solicited from those members who were unable to attend, resulted in the Committee's Interim Report, submitted to HUD on May 1, 1968. It was made available at the same time to members of CUT. The Interim Report indicated the scope and character of the Committee's early activity and served as a working guide to the direction, organization, and coordination of the Committee's subsequent efforts.

The Committee met with representative officials from HUD on May 25, 1968, and learned of their reactions to its Interim Report. The Committee then identified several topics for further work to be accomplished by additional subcommittee and individual efforts. The results of these activities were made available in mid-June to the members of the Committee.

The Committee's final meeting was a week-long work session June 24–28, 1968. During this meeting the Committee reviewed the material it had in hand, identified and completed additional writing assignments, and critically reviewed its efforts as they progressed. Having completed the major sections of its report, the Committee adopted a new organization for its Final Report to HUD. A draft of the Final Report was prepared by the staff and circulated to the members of the Committee for criticism and comment in mid-July. This draft was also made available to CUT at the same time. The Report incorporates the revisions suggested by the members of COSBUR.

Appendix B

A Summary Report of the Recommendations of the Committee on Social and Behavioral Urban Research and the Committee on Urban Technology

INTRODUCTION

The Committee on Social and Behavioral Urban Research and the Committee on Urban Technology were composed with different primary emphases and different skills. The membership of COSBUR was drawn predominantly from the social sciences and largely from universities, while CUT was composed primarily of engineers drawn from industry and universities.

The two committees shared a commitment to the view that the resolution of current and future urban problems is fundamental to the life of the nation, and that the research and development contribution to successful management of these problems will place an enormous demand on the engineering, technical, and scientific resources of the nation.

The initial meeting of the two committees was in part a joint session during which the committees were briefed by representatives from the Department of Housing and Urban Development on the current status of the Department's research and development program. Prior to the transmittal of the committees' interim reports to the Department, an executive group, composed of the chairmen and two members from each committee, met and reviewed the activities of the two committees and agreed on a common outline for interim reports of the committees. Except for the initial and executive committee meetings and periodic briefings by staff on the accomplishments and directions of the parallel effort, the two committees worked separately and independently. Agreement in the recommendations of the two committees is particularly significant in that they were arrived at independently. In view of the independence of the separate committees, it may be assumed that a high degree of priority should be given to those recommendations on which the committees agree. The emphasis in this summary coordinated report, therefore, is on those recommendations.

In addition to agreement between the two committees on several recommendations, they also reached somewhat different but, nonetheless, complementary conclusions with respect to some matters, as a consequence of having taken different approaches to them. In these instances, differences should be viewed as mutually additive or reinforcing. It should be added that there were no fundamental differences in the advice given by the two committees to the Department of Housing and Urban Development, except perhaps as these may arise from the underlying conceptual frameworks that served to guide the committees' work.

Finally, with respect to the summary report of the separate recommendations of the two committees which follows, the fact that certain particular recommendations appear among those of one but not of both of the committees' reports does not mean that they are of any less importance to the Department of Housing and Urban Development. Given the independence of the committees' efforts and the diversity of perspective and areas of competence represented in their memberships, it would be surprising, indeed, if all recommendations emerged simultaneously from the efforts of both committees. The recommendations of the two committees and the reasoning and findings on which they are based are reported in detail, of course, in the separate reports of the two groups.

This summary report of the recommendations on strategies for urban research and development responds to a request from the Department of Housing and Urban Development. It is a summation of the recommendations developed independently by the Committee on Social and Behavioral Urban Research and the Committee on Urban Technology since the organizing meeting of those committees on December 12, 1967. More complete recommendations, together with discussions on which they are based, are to be found in the separate reports of the two committees.

STRATEGIES FOR PLANNING RESEARCH

Both committees stress a strategic approach to research and development, which confirms the fact that hardware and software must be considered and planned for together and that they are not mutually exclusive investment alternatives. Both committees argue for the advantages of a multidisciplinary approach to urban problems and concur in the recommendation that first priority in developing the Department's research and development program should be given to mobilizing and creating new social and behavioral science research and application capabilities. The committees agree further that the buildup of software requirements should complement rather than substitute for investments in technological research and development. The Committee on Urban Technology finds that

> Both physical technology and social technology must be brought together in evaluating and implementing solutions to urban problems. . . . Accordingly, the development of the "social engineer" through the efforts of the universities, municipal governments, and the Department of Housing and Urban Development should have the highest priority. This type of capability is essential to define the needs and thus provide the performance objectives to be satisfied by evaluation of the wealth of available physical technology.

From a different perspective, the Committee on Social and Behavioral Urban Research arrived at the same conclusion:

> This country, as well as other societies, is still being penalized because the human dimensions of the urban process are so poorly understood. In the absence of a purposeful and concerted effort to remedy this situation and to anticipate both the future problems and opportunities that urban America may face, it will continue to be penalized. For such an effort, the social and behavioral sciences are both relevant and useful, if not critical. They make possible the shift from an emphasis on "bricks and mortar" questions in urban research and development to a systematic emphasis on questions that, when answers are forthcoming, will illuminate processes of social change, provide information about human consequences of urban problems, and point to new options for social action.

In setting forth additional priorities in a strategic approach to urban research and development, both committees give heavy weight to the need for program evaluation research. This conclusion was approached by the committees in different ways that should be made explicit. The Committee on Urban Technology, in giving primary emphasis to assessing the value of implementing available technology, viewed each implementation as an operational experiment designed expressly for the purpose of observation and analysis as to its contribution to urban improvement. The realization of the physical design and cost estimates of these experiments should in each instance be evaluated. Project evaluation in this sense is a short-term effort. However, the evaluation of the social and behavioral consequences of both technological and social projects and programs is agreed by the committees to be a continuous and long-term activity. The Committee on Social and Behavioral Urban Research assumes that policies and programs must be under constant scrutiny if they are to achieve their intended results and, therefore, recommends that program evaluation research be given high priority in the allocation of the Department's research and development resources.

Another element in choosing among priorities in a strategic approach to urban research and development is, of course, the allocation of resources between short-term and long-range projects. The two committees agree on the value and necessity of relatively short-term investments, but they also agree that a significant proportion of research and development funds should be invested in research and development activities that might be expected to yield contributions in a long-term period. The Committee on Urban Technology recommends that 50 to 60 percent of the Department's research and development resources should be put into projects for early implementation, and 30 to 40 percent should be allocated for long-range projects. The Committee on Social and Behavioral Urban Research agrees on the merit of short-term research and development projects, particularly as they relate to the implementation of new technology. The committees agree that proof on a limited scale is an essential step before widespread applications are undertaken in a large number of cities or unduly large sums committed to short-term projects. If scientific and technological knowledge and inquiry are to serve the society well, they must be used in part to inhibit action on attractive but misconceived courses, as well as to create new options for action.

Both committees concluded that, while the buildup of research and development capabilities should receive first-order priority, the guiding principle for setting priorities should be that the development of capabilities, manpower and funding be kept carefully in phase. Thus, allocations of money should neither exceed nor fall short of qualified manpower and its capabilities for implementing the projects to which the money is allocated. On the other hand, sufficient funds should be allocated to support the manpower and capabilities assigned. An important preliminary to the achievement of the proper balance is an accurate survey of the qualified manpower that is available.

Both committees recommend that a coordinated development of available and potential resources should proceed at a level of magnitude that would double the Department's research and development effort each year for three to five years as an initial step. Beyond this, the Committee on Urban Technology recommends a contingency plan of accelerated activities to be undertaken coincident with the conclusion of United States participation in the Vietnam war. This plan would depend on the capability that has been achieved at the time the accelerated allocation of resources would be made available and could involve enhancement of research, of development, or of application efforts. The Committee on Urban Technology is in agreement with the Committee on Social and Behavioral Urban Research on the point that, whatever funds are available, research and development priorities determined primarily by a sense of urgency to show results must be complemented by the need to develop programs and resources that will contribute to improving the quality of urban life over the years to come.

In the citation and discussion of essential recommendations that follow, an attempt is made to correlate in summary form the recommendations of the two committees, so as to illuminate the essential perspectives and significance of the full reports of the committees.

In considering the basic strategy for developing the Department's research and development program, the Committee on Urban Technology concludes that

> While there are significant research opportunities that will bring forward new technology that will contribute to urban improvement, the primary opportunity resides in the effective application of available technology to the most urgent urban development problems. . . . Particular emphasis must be given to efforts by the applied social scientists that will define these needs and requirements and thus guide the technological efforts.

Examples of possible applications of available technology are improvements in factory-produced low-cost housing; the use of sophisticated systems for the provision of such utilities as water, energy, communication, chilled water for air conditioning, and waste disposal; and more efficient planning for land use.

With respect to the basic approach to be adopted in formulating research and development policies and programs, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

> . . . establish R&D program priorities in a manner consistent with the principle that the growth of extramural R&D expenditures be kept in phase with the mobilization of existing and potential R&D capabilities, the development of manpower, and the creation of new capabilities; begin immediately on the tasks of strengthening present R&D capabilities and creating new ones in the social and behavioral sciences. . . .

This is, to begin with, a matter of determining the best resources for various tasks, that is, university, industry, nonprofit, municipal government, inhouse. The effectiveness of the extramural network will depend on inhouse insights and capabilities, permitting the most efficient use of the resources of the network in planning, programming, and execution of research and other tasks. Accordingly, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

> . . . allocate its R&D budget so that (1) a substantial share is earmarked for the orderly development of a network of extramural research and development capabilities, including the required supplies of scientific and professional manpower; (2) a significant portion is devoted to program evaluation activities; and (3) adequate provision is made to support short-run research centering on the implications of the results of efforts to measure the effects of the urban program for policy intentions.

RESEARCH AND DEVELOPMENT CAPABILITIES

Research and development activities must be related to the manpower and institutional resources available for conducting them. This requires that a program for investment in R&D be accompanied by programs designed to (1) assure access to and effective use of available R&D capabilities; (2) enhance existing manpower and institutional resources; and (3) help bring into being and assist in the growth of new R&D institutions as required. In the absence of planned efforts along these lines, there is no assurance that investments in R&D will produce results useful for the entire range of decision-making involved in planning, implementing, evaluating, and reformulating or modifying policies and programs.

The two committees agree that the Department's present policy of having most of its research and development conducted extramurally through contracts and grants is sound. The network of related extramural research and development capabilities needed by the Department of Housing and Urban Development can be constructed in part by mobilizing existing research capabilities, so as to bring them more effectively to bear on issues of social policy. In addition to utilizing available research capabilities, the committees agree that the Department must also create new institutional capabilities to achieve those mission-oriented research objectives for which existing resources are likely to be unresponsive or unsuitable. Further, both committees stress the critical importance of the Department's inhouse research and development capability for the establishment of goals, program planning, project management, and evaluation. These specific recommendations of the two committees for developing a coherent network of relevant research and development activities are aimed at meeting the Department's research and development needs by university, industrial, nonprofit, municipal government, inhouse, and other capabilities.

With respect to mobilizing existing university research and development capabilities the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development support

- basic research in the behavioral and social sciences, as well as in the natural sciences, to contribute to the growth of knowledge and its application to the problems of the city;
- a small number of university urban institutes or centers, on a continuing basis, selected on the basis of staff competence and diversity of interest and location, and expand the number of such institutes or centers as funds become available;
- unsolicited as well as solicited proposals that meet the criteria of merit and quality by grant and contract; and
- university educational training programs related to urban needs by providing funds for curriculum revision, facilities, and predoctoral and postdoctoral fellowships.

To encourage universities to strengthen and redirect their capabilities and to apply their talents to the requirements for training, research, and community participation in urban affairs, the Committee on Urban Technology recommends to the Department of Housing and Urban Development that

> An inventory should be taken of the capabilities that now exist or that might be developed in the universities. This should then be compared with a projection of requirements for professional manpower to determine a basis for further fellowship support. . . . Universities should be encouraged to join their efforts with local governments and industry to develop viable programs of education seeking to improve the capability of those involved in urban management.

One of the quickest ways to fill the gap between the need and the supply of professional manpower is to embark on a program of mid-career updating of selected persons who have a potential for carrying greater responsibility and who are now employed in urban management. This might take the form of a three-month study of modern urban science and technology (MUST) with lecturers from universities, government, urban institutes, and industry. The course should not attempt to make each manager an expert in a narrow discipline, but rather to orient each toward an increased understanding of relationships, interfaces, and the application of modern tools for managing urban affairs.

With respect to utilization of existing nonacademic private research and development capabilities, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

> . . . systematically survey existing private profit and nonprofit research and development organizations and consulting firms to assess their resources for undertaking urban-related R&D and to set standards of expected performance.

In order to take advantage of the talent and managerial experience of industry, the Committee on Urban Technology recommends to the Department of Housing and Urban Development that

> . . . [it] establish a seminar and continuing dialogue with industrial leaders to explore in depth the terms and conditions industry would need in specific community situations to reduce the risks of participation to acceptable levels. This is necessary because, in general, two main factors will govern industrial participation: the risk and the market, that is, the potential volume of activity. One way of overcoming the risk factor is to have private enterprise act as an agent for a government agency. Such an arrangement enables private industry to contribute its management experience and technical capability with minimum risk to the stockholder.

In order to create coherent applied research and development capabilities, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

> . . . undertake the planning activities required to bring six additional urban institutes into being, including exploration of the opportunities to create such institutes by modifying or expanding research centers now associated with other federal agencies, private organizations, or universities.

The Committee believes that the urban institutes should have a continuing functional relationship with the Department of Housing and Urban Development but that the institutes themselves should work out strategies for research and define responsibilities for detailed operations. The Department and the institutes should work out effective balances of problem-solving and training functions, as particular areas and programs require.

With respect to the use of the Urban Institute as a research and development resource, the Committee on Urban Technology observes that the newly created Urban Institute

> . . . could be a source of creative contributions; it could test hypotheses; it could evaluate alternatives; and it could compare evaluations made by other groups.

The Department's funding should emphasize this kind of contribution to the departmental mission. The Department's dependence on the Institute will require some continuity of funding at a level sufficient to maintain a healthy, productive, and efficient work force in the Institute devoted to the Department's requirements. This is often referred to as a staff of "critical size."

To create research and development capabilities in state and local governments, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- experiment with the form, location, and funding of Municipal Development Centers (MDC's) to discover the most effective means for strengthening research capabilities in municipal governments;
- secure authorization for programs designed to expand the supplies of scientific, professional, and related manpower for service with local governments in connection with urban affairs; and
- examine the means by which urban R&D capabilities can be provided for state governments.

The experiment with establishment of MDC's should be conducted so as to be consistent with the development of external research and development capabilities, that is, to achieve as wide a variety of forms, competencies, and "end-products" as possible from the investment of scarce resources. Therefore, the Department of Housing and Urban Development should

> . . . increase the number of MDC's each successive year over the next three years to about 25, so as to provide an experimental base for determining whether the MDC's should be made operational on a national scale. . . .

The principal aim of the MDC program is to link a research and development capability to competent municipal administration. The Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development, while constantly reviewing its original six pilot efforts, increase the number of MDC's each year over the next three years to provide an experimental base to determine whether they should be made operational on a national scale. An experimental base of between 20 and 30 centers would be sufficient to provide the information and experience required for such a decision. The Committee recommends that the Department

> . . . evaluate the success of the MDC experiment as an attempt to (1) provide for mutually profitable relations between researchers and local decision-makers, (2) attract professional manpower into local government, (3) produce new and needed skills, (4) contribute to the information requirements for sound policy judgment at all levels of government, and . . . exercise sufficient control over the MDC's to assure a reasonable body of comparable data for use by local, state, and national research bodies. . . .

In order to broaden the viewpoint and upgrade the professional competence in state and city operating organizations, the Committee on Urban Technology recommends to the Department of Housing and Urban Development that

> . . . consideration should be given to the possibility of collaborating with existing organizations concerned with developing a professional city management.

Opportunities to work with academic institutions and industry should be welcomed by city administrators. One way of relating to university capability might be to create openings for young faculty members or graduate students to spend a year or more as city employees, with freedom to maintain close and formal relations with the urban research facilities of their home institutions. Such a cooperative urban fellowship program could become a means for recruiting and developing applied social scientists.

With respect to developing the Department's intramural research and development capabilities, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

> . . . increase its intramural multidisciplinary R&D staff to between 75 and 100 professionals over the next five years and draw personnel from outside as well as from within the social and behavioral sciences; offer salaries and

working conditions that will attract able and experienced personnel from the academic and industrial worlds, making provision for a large proportion of higher grades and a disproportionately large number of "supergrades."

It should be anticipated that the Department of Housing and Urban Development will encourage and facilitate the mobility of research specialists among the urban institutes, municipal development centers, universities, industry, and the Department's inhouse staff. Fellowship programs should attract university researchers for short periods of service with the Department. The committees join in recommending that the Department of Housing and Urban Development

. . . complement its inhouse capabilities with independent advisory bodies on R&D policies and programs.

The Department will want to continue to use consultants on technical problems and policy issues to complement its own staff resources. Whether the Department's most sanguine budget hopes are realized or frustrated, it will be in better position to set priorities and allocate resources for research and development if it can secure informed and tough-minded advice from external sources on both an *ad hoc* and a continuing basis.

In order to enhance the research and development staff capabilities within the Department, the Committee on Urban Technology recommends to the Department of Housing and Urban Development that

. . . the magnitude and importance of the urban problems warrant applying substantially more of the Department's staff to its urban research and development mission, suggesting an annual doubling of the research and development effort each year for at least three years;

the Department should develop a staff project management structure for monitoring, guidance, and correlation of projects developed within the Department but carried out elsewhere under contract.

Such a structure is necessary as long as the Department does not possess an inhouse research capability. Many projects should be carried out by private research agencies and the private entrepreneurial community with experience in practical matters of urban development. Some will be appropriate for urban institutes and in universities, however, and invitations to respond to such proposals should continue to go to those institutions that have specific capabilities in the relevant areas of technology and applied science, and that have unique opportunity to work with local governments. The Committee on Urban Technology recommends that the Department of Housing and Urban Development

. . . make provisions for the discretionary use of some portion of contracted funds, develop mechanisms to process unsolicited proposals, and support state and local research and development programs through contract.

POLICY ANALYSIS AND PROGRAM EVALUATION

The two committees agree on the importance of goal analysis and program evaluation for making research and development efforts relevant for the formulation of departmental policies and programs. With respect to research and development contributions to policy analysis and program evaluation, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

- devote a major and continuing inhouse effort to the translation of statutory statements of goals into operational terms, so that the relationships assumed to lie between goals and the instrumentalities for realizing them are made explicit and amenable to research;
- continue to have the Director of the Office of Urban Technology and Research report directly to the highest levels within the Department;
- invest a significant proportion of its R&D budget in evaluation research on all operating programs; and
- conduct evaluation research designed to assess both the intended and the unanticipated effects of programs on a continuing basis, so that the results will contribute fully to the reformulation and modification of policies and programs.

The Committee on Urban Technology believes that the establishment of goals for the departmental mission is of the greatest immediate importance and that the application of technology to the spectrum of community problems should be continuously evaluated, and, therefore, concludes that

> . . . a structure for the continuous evaluation of the results of urban technology programs be developed; approximately 5 to 10 percent of the program funds should be devoted to evaluation. More may be needed to guide and support program planning.

The development of criteria for evaluation and the scheduling of periodic evaluations should be required elements in all project work statements. Such an approach should assure maximum learning from each project; identify technology, plans, and programs that deserve dissemination; avoid repetition of less fruitful paths; guide formulation of new projects; and provide experience information to assist in the selection among both solicited and unsolicited project proposals.

RESEARCH AND DEVELOPMENT PROGRAMS

Contemporary attitudes toward intended social change and techniques for effecting them make the role of information increasingly important in both planning and implementing action decisions. A powerful tool in the national effort for urban reform and reconstruction would be the capacity for the systematic collection, storage, processing, and selective dissemination of data relevant to urban needs and the functioning of urban programs. The two committees agree that the Department of Housing and Urban Development is in a position to assume the key role in the development of information requirements, resources, and systems, and thus to contribute to the creation of operationally effective urban information systems.

With respect to research and development related to developing urban information systems, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

> - organize its data, information, and measurement activities under an Office of Information Management;
> - associate itself with several major attempts to develop, test, and evaluate specific information systems, but refrain from investing sizable resources in the development of large-scale urban information systems until there is a better understanding of how they can best be introduced and constructed; and,
> - devote a special effort to systematic investigation of the kinds of urban intelligence systems that would complement the growth of urban information systems.

The Department is in a position to assume the key role in the development of urban information systems and thus contribute to the creation of a national urban information system. Its activities in the information field, therefore, should, to the extent now possible, be based on an overall model of what a complete information system to meet national urban needs would be like. The Committee on Urban Technology confirmed the recommendations of the Committee on Social and Behavioral Urban Research in its report.

With respect to planning activities and urban information needs, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

> . . . provide immediate support for research that will provide two kinds of information requirements: (1) demographic studies, for which the significant variables and the methods for data gathering and analysis are immediately available and the results of which are known to be relevant, and (2) studies of the conditions of variations in neighborhood cohesion, for which the variables and significant measures have yet to be developed but which can be stipulated to have major significance and long-run relevance.

With respect to urban research and development planning and urban information needs, the Committee on Urban Technology recommends to the Department of Housing and Urban Development that

> . . . the immediate planning efforts of the Department should include program planning among its major objectives. This will require: (1) examination of historical trends, (2) establishment of an information system, (3) research

and analysis of the urban environment for opportunities and constraints, and (4) synthesis and evaluation of alternative courses of action.

The magnitude and expanding nature of these tasks warrant a substantial increase in the Department's capabilities as competent personnel become available. In addition to personnel with a high level of competence in the sociological area, the Department will require persons who are competent in the development and operation of a logical systems analysis structure, and persons who are knowledgeable in both the availability and the application of technology in synthesizing feasible alternative solutions to urban problems as well as evaluating the worth of alternative solutions. Accordingly, the Committee on Urban Technology recommends that

> . . . the Department should assume the leadership in establishing a mechanism to correlate the mission responsibilities of all the federal agencies concerned with various aspects of urban research and development planning. In addition to representation from the federal agencies, there should be representation of the viewpoints of industry, universities, and special institutions.

With respect to the promise of "the systems approach" for coping with urban problems or for designing research and development programs, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development

> . . . support multidisciplinary research to identify the systems parameters and interacting properties of urban units, investing only modestly in the immediate future in computer-aided simulations of the urban environment.

The Committee on Urban Technology recommends that

> . . . the task of urban development cannot be undertaken without consideration of and planning for the interrelationship of the whole community, including both the suburbs and the urban areas.

With regard to specific substantive research and development topics that should be supported by the Department of Housing and Urban Development, the differences in the recommendations of the two committees reflect differences in their areas of competence, but the results of these independent efforts are not in opposition. Indeed, the committees with to reemphasize the virtue and necessity of viewing technological and social and behavioral science research and development requirements as inseparable in a strategic approach to improving the quality of urban life.

With respect to overcoming obstacles to implementing present policies and finding new program instruments, the Committee on Social and Behavioral Urban Research recommends that the Department of Housing and Urban Development support specific research projects in the following areas:

- local governance, as, for example, (1) studies of the ways different types of governments function in different social environments, and (2) the advisability of transferring functions from one to another form of government;

- fiscal policies and the provision of public services at the local level, as, for example, (1) studies of the impact of the property tax on location decisions, land use, and housing maintenance, and (2) the costs and benefits of new types of user charges;
- the effects of legal controls, as, for example, (1) the nature and outcomes of the bargaining process between city developers and regulating agencies, and (2) the potential benefits of new legal definitions of ownership; and
- the social and institutional setting of housing programs, as, for example, (1) alternative measures of housing quality, and (2) functional criteria for density controls.

With respect to the successful implementation of available technology and to provide a base for further technological program development as social requirements are identified, the Committee on Urban Technology recommends to the Department of Housing and Urban Development that

- a series of carefully chosen large-scale experiments should be undertaken to explore the significant applications and implications of balanced systems for community development; the Department is urged to take the leadership in continued exploration of opportunities for further developments in industrialized housing production;
- the potential opportunities of the community service center concept for the organization and distribution of discretionary services should be studied and evaluated. An early stage of the research should explore appropriate layouts and combinations of facilities;
- the feasibility and usefulness of sophisticated systems for nondiscretionary services should be evaluated in full-scale field experiments in several communities and in several variations. Such experiments should work to evaluate the desirability and economics of combined service tunnels for utilities, such as water, energy, communication, chilled water for air conditioning, and waste disposal;
- consideration of improvement of rail-guided and independently controlled vehicles for use in urban areas and of short-haul aircraft technology should be a part of urban transportation planning; in Departmental programs associated with the planning of expensive long-lived public facilities systems, allowance should be made for further application of forecasted technology to avoid obsolescence;
- efforts should be made to encourage further development needed for adapting the performance criteria concept as a possible alternative to design-specification-type building code; and research for low-cost housing should seek means to reduce all cost elements, especially those outside of construction, and should consider the mixed utilization of new construction, refurbishing, upgrading, and relocation.

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Appendix C

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